Famous Artists Painting Course

Famous Artists Schools, Inc., Westport, Connecticut

Section **2**

Color

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The color wheel

All the colors in this "wheel" are made from red, yellow and blue paint, out of tubes. These are called the *primary* pigment hues. Mixing yellow and blue together produces green. Blue mixed with red makes violet. Orange is made from a mixture of yellow and red. These three, green, violet and orange, are called the secondary colors. If we mix adjacent primaries and secondaries, we produce six other colors, which are called *intermediates*: yellow-green, blue-green, blue-violet, red-violet, red-orange and yellow-orange.

An introduction to COLOR

Every artist who uses color should have a clear understanding of what color is, how to organize it, and how to employ it to best advantage.

Color is a highly personal and variable element. There are, however, certain basic principles in the handling of color which you must master. The material presented in these pages will explain these principles. Your ultimate development as a colorist, of course, will depend to a large extent upon your own imagination, ingenuity, and taste.

What is color?

Color is a *sensation* we experience when our eyes are struck by light waves of varying lengths. We see objects because nature has given us a very sensitive and complex "receiving system" in the form of our eyes, nervous system, and brain. Our eyes pick up light waves and translate them into a sensation of sight, just as our ears pick up sound waves and translate them into a sensation of sound.

In order for us to "see" anything, there must be light. The rays of light which come to us from the sun we call "white light." Yet, strange as it may seem, this white light contains all the colors that we see around us. This is demonstrated when you see a rainbow during a summer shower, or by shining a ray of white light through a triangular piece of glass, called a prism. Sir Isaac Newton, in 1667, first discovered how pure white light could be divided into different groups of color waves by using the prism in this way.

All colored objects contain "pigment" which has the ability to soak up certain rays of color, while reflecting others. The pigment in the skin of a red apple, for instance, reflects only the *red* rays, and absorbs all the others. A green apple, on the other hand, reflects only the green rays to our eyes while absorbing the others.

Some materials are especially rich in pigment. These materials are carefully selected and purified into the paints you buy at your local art store. They have been manufactured from various plants, animals, and minerals. When you mix these pigments, you are mixing pure "color." In other words, you are working with purified pigments which have the special property of reflecting the particular colored waves you want to see, while absorbing all the others. From now on, unless otherwise noted, all our color discussion will be in terms of *pigment,* and not of light.

Color organization

Most people describe color in a vague, general way. They use such terms as "Baby Blue," "Apple Green," "Grass Green," "Canary Yellow," "Coral," "Peach," "Rust," etc. Any person who works professionally with color, however, whether he uses it in making paintings or for some other purpose, must be more precise. He is faced with the problem of using and controlling hundreds of different colors.

Scientists prepared the way for the development of logical color systems. As long ago as 1866, a scientist named Helmholz discovered that every color has three different qualities, or dimensions: *hue, value,* and *intensity*. He neglected to work out a practical system for applying his theory. Therefore it had little influence on art until much later. Around the turn of the century, Albert H. Munsell, an instructor in art, realized that everyone who wants to use color correctly must recognize and understand these color characteristics. Beginning with this theory as a starting point, he developed a complete system for the analysis and organization of color. Today the Munsell system is widely used throughout the world.

It is not necessary for you to study or memorize complicated systems of numbers and letters. As a practicing artist, you are most concerned now with learning how to recognize, judge and control differences in the *three dimensions of every color:* HUE, VALUE, and INTENSITY.

The following pages will give you the information you need in order to do this. If you master this material, you will be able to judge and describe any color accurately. You will also know how to mix two or more colors together to make exactly the color you want. Finally, you will learn how to combine different colors in pleasing and effective compositions.

It is important to remember, however, that learning to understand and use color results not from reading about how it is done, but by *actual practice of eye and hand*. These pages will give you the information you need, but the most important thing is to *apply* this information to your own work with color.

1. Hue

The word "hue" is used in these lessons to denote the position of a color on the color wheel. It has nothing to do with whether the color is light or dark, strong or weak. Hue, in reality, is the term used to *name* a color. In speaking of people, one says, "What is the *name* of the man?" In art we say, "What is the *hue* of the color?"

Yellow, blue, green, violet, red-orange, and so on, are different *hues*. They lie at different points on the wheel. In the same way, we can distinguish variations of hue within a single, basic color. For example, yellow-green and yellow-orange.

The closer together hues are located on the color wheel, the more related and harmonious they are, because each color contains some of the color lying next to it. On the other hand, hues which are separated from each other are more distantly related. Colors which are opposite each other across the wheel have absolutely nothing in common. They form the strongest contrast possible, and create a neutral gray when mixed together.

Warm and cool colors

When artists speak of "warm" and "cool" colors, they are again discussing the qualities of hue, rather than of value and intensity. If you will divide the color wheel in half by an imaginary line between yellow and yellow-green at the top, and between red-violet and violet at the bottom, you will see that the hues in the left half of the wheel, centering around orange, appear *warm;* whereas those on the right, centering around blue, appear *cool.*

This reference to colors as warm or cool results from association. The words actually describe the physical sensation we feel when we are surrounded by large masses of these colors. In a room with blue walls, for example, we tend to feel cool. In a room decorated with yellow, hot reds or oranges, we feel warm. There is a good reason for this physical reaction to color. From our daily experiences we associate yellow, orange, or red with fire. Thus, they mean *heat.* Cold, deep water is bluish or greenish. A starlit winter sky is blue. Ice has casts of green and blue. These associations account for our various emotional reactions to the temperature quality of all hues. We have more to say about the psychological effects of color, later on in the text.

The colors halfway between these warm and cool extremes, such as yellow-green and red-violet, are fairly neutral; they seem neither very warm nor very cool. The warm and cool qualities of color at these points are very subtle. Seeing a green hue which is fairly close to yellow, we sense that it tends to be warm as compared with a green further around the wheel, toward blue. Thus we speak of a "warm green" and a "cool green."

We can extend this distinction throughout all the hues of the color wheel. For instance, consider red or violet. If the red leans toward the orange, it is a warm red because yellow has been added. If it contains more blue, it is a cool red. Similarly, if a violet leans toward the red, it is a warm violet. If it contains more blue, it is a cool violet.

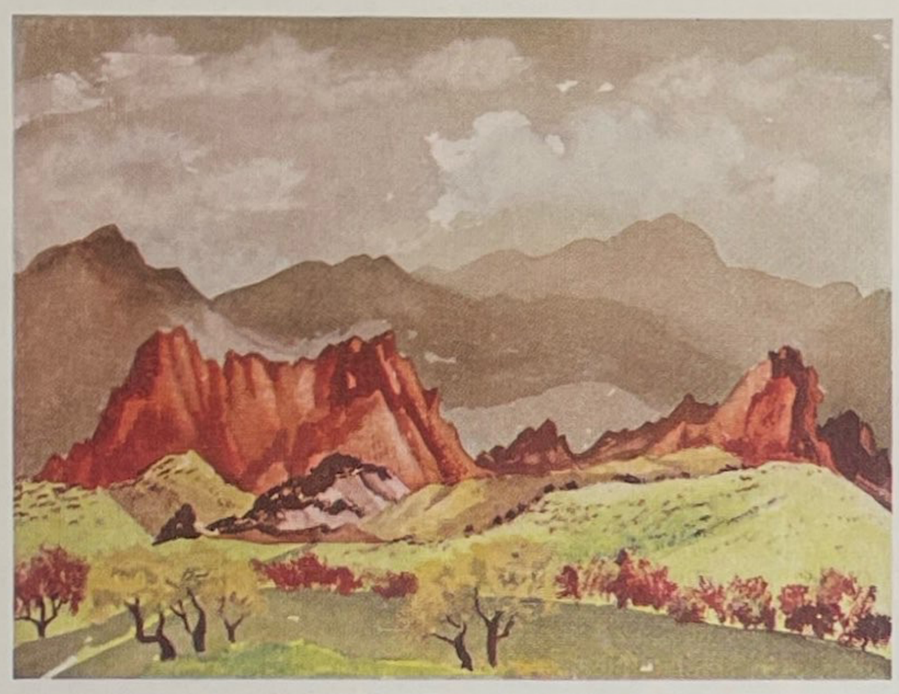
In the main, any hue is warmed by the addition of yellow, and cooled by the addition of blue.

Theoretically, neither white, black, nor any neutral grays mixed from white and black, are colors. They lack two of the essential color dimensions, hue and intensity. However, they are both very useful for modifying the values and intensities of the colored pigments. Of the blacks, ivory black is considered warmer than lamp black, flake white warmer than zinc white.

It is not enough simply to understand the principles of the color wheel, and warm and cool color. You must be able to recognize them in nature, and in paintings. From now on, make it a habit to know the colors that you see around you, in clothing, cars, buildings, etc. As an artist, you cannot settle for the general color description of red, yellow, or blue. You must learn to recognize several different reds that range from cool, violet-red, to warm, red-orange. Certain painting subjects call for a warm color scheme, others require cool hues throughout. You may even combine both warm and cool hues in a single painting, if the problem calls for such striking contrasts. It all depends upon the ultimate effect that the artist has in mind. The important point is to *control* the warmth or coolness of the hues.

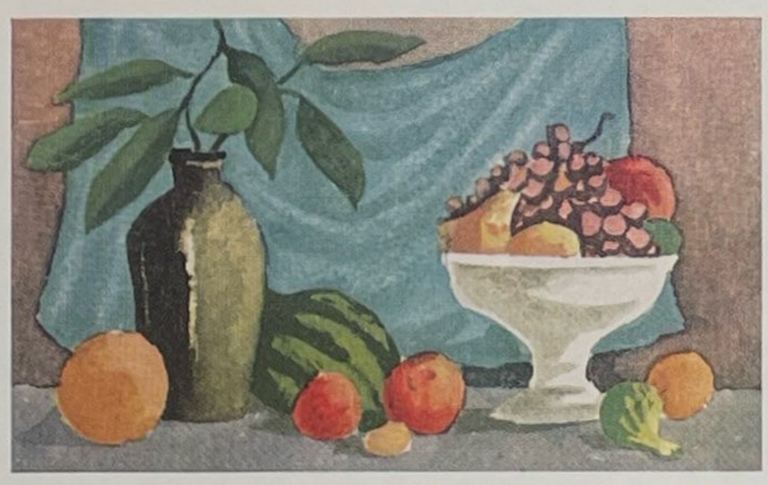
Later you will see how this knowledge will help you to paint a still life and portrait, and create the effect of sunlight and shadow in a landscape.

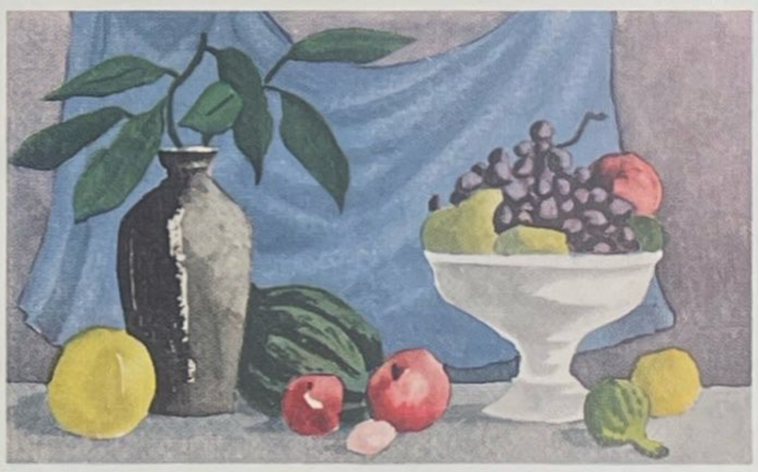
These three apples are different in *hue*. One is green, one is yellow, and one is red.



This is a warm color scheme. Dominant reds, oranges, and yellows, are appropriate for the sunny desert scene. Compare the warmth of the mountain and sky in this picture, with the cool bluish-grays in the same areas of the painting at the right.

This is a cool color scheme. The colors in a winter landscape should reflect the temperature of the season. The artist here has captured this quality in cool hues of blue, green, and gray blue. Even the red of the barn is a cool red.

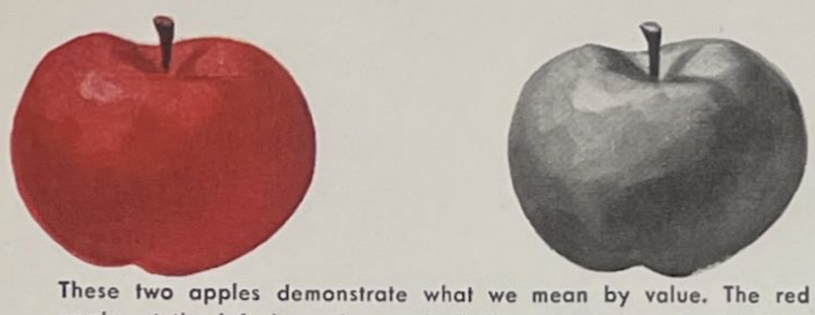




Here is a warm and cool version of the same painting. Both pictures contain the same basic hues, but the hues in the one at the left have been warmed by the addition of red, yellow, or orange to the basic colors. Blue has been added to the colors in the picture on the right. For example, the background is a dull red-violet at the left, blue-violet at the right. The swatches in the center show the typical warm and cool variations of basic hues. The left column is warm, the right cool.

The hues in the left half of the color wheel are considered warm, those in the right half cool.

Each bar contains a warm and cool variation of the basic color. The upper half is cool, the lower half warm.



These two apples demonstrate what we mean by value. The red apple, at the left, is made up of all three properties of color: hue, value and intensity. The apple at the right is a colorless photograph which contains only values.

2. Value

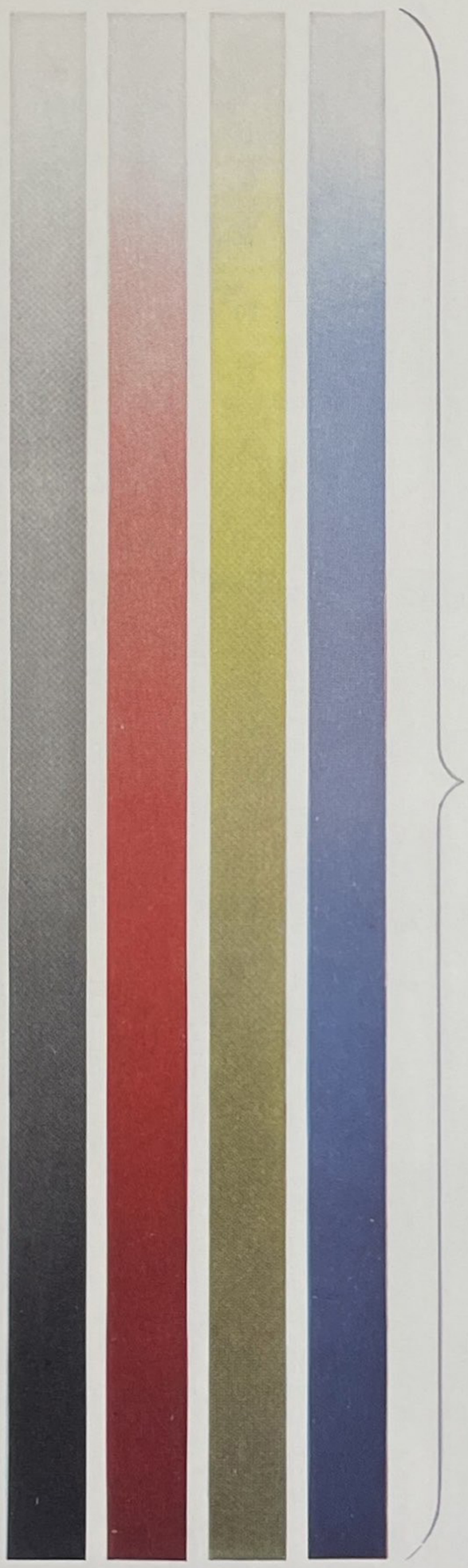
The first dimension of color is hue. The second dimension is *value*. For any artist working in color, *value is the most important dimension*. It is impossible to overemphasize this simple fact. Mistakes made in choice of hue or intensity are far less serious than errors in value. At all costs, learn to keep your values correct! When we use the word "value" we are referring only to *lightness or darkness of a color*. It's that simple.

The words *tint* and *shade* refer to the value of a color. To make a tint we add white to a pure color; to make a shade we

This is a high key painting. A large amount of white has been added to each color. Compare its values with those in the upper third of the columns at the right. This choice of values in a picture creates a delicate, pastel effect.

This picture was painted with a middle range of values, no extremes of dark or light. Because very little white or black was added to the colors, they are more intense than those in the high or low key pictures.

The values in this low key picture come from the bottom third of the column scale on the right. Notice that the light areas, here, are about the same value as the dark areas in the high key picture



Value scales

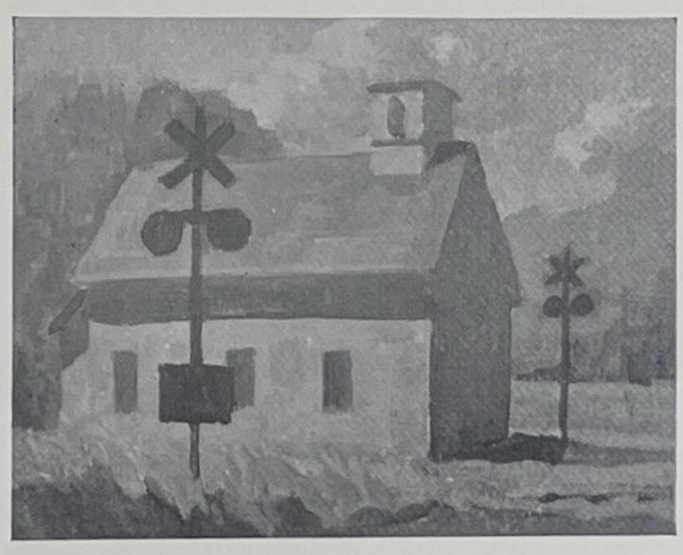
The first scale on the left contains the familiar gradation of grays, ranging from white to black. The second column contains different *values* of a single red hue. The value gradations in this column match those in the first column. The yellow and blue are arranged in exactly the same way. Squint your eyes, and move them horizontally across any level in this group of scales. You will see that the four strips of gray, red, yellow, and blue are *the same in value*. The same hue simply becomes darker or lighter. The pure yellow, as it comes from the tube, is near the top of the strip, while the pure red and blue take their place lower in the value scale. On the opposite page, you see a black and white photograph of this value scale, in which all four bars are exactly alike.

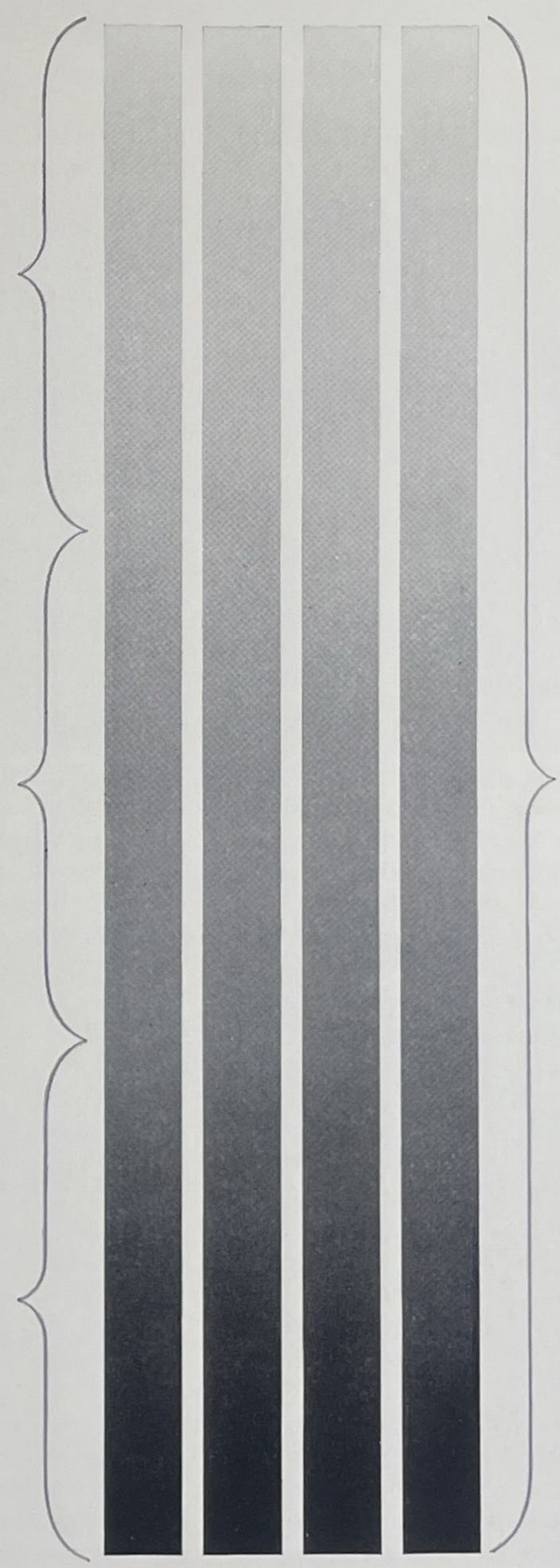
In this picture we have used the full value range from white to black to create maximum contrast and visibility.

add black. In neither case do we change the *hue*—only the value. The chart on the opposite page shows how the value of pure colors from the tube can be changed and controlled by the addition of black and white.

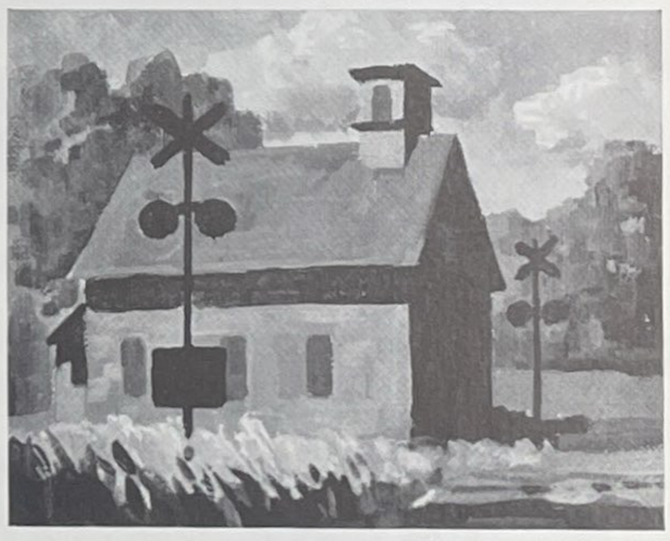
To handle color effectively you must first be able to see and recognize these value differences in your subject, then interpret these differences on your palette. We say interpret, rather than match, because the range of values in nature is much greater than that of your pigments. Black paint is much lighter than a very dark shadow; white paint many times darker than sunlight reflected from a shiny surface.

The artist, looking at his subject, decides which area is the lightest and which is the darkest. Then, he decides how light or dark he will make these extremes in his painting, and relates all the other values to them. The examples on this page show you that the value-spread from light to dark can be limited to a high, middle, or low key, or include the whole range from black to white. The choice depends on the effect you wish to create. The main point to gain from these pages is the *importance of value control.* Once you decide on a value range that seems appropriate for the effect you want, keep it consistent throughout your whole picture.





This page is simply a black and white photograph of the opposite page. It demonstrates the importance of recognizing and controlling different values in your paintings. The pictures are effective, although they contain only values, no hues or intensities.



3. Intensity

The third dimension of color is *intensity*. This word refers to the *strength, saturation,* or *purity* of a color. A pure red of full intensity gives our eyes the sensation that it is "redder" than when diluted with gray, or some other color. There is more red pigment in the pure red. It has greater ability to reflect the red rays of light.

Most colored pigments are of maximum intensity as they come from the tube. In painting a picture, you will seldom use your colors in this pure state, unless you are striving for a particularly brilliant effect. To reduce the intensity of any pure pigments, you may add black, or white, or gray. Two pages back we discussed the value changes in the bars of red, yellow, and blue. Now turn back to that chart, and notice that the colors become *weaker* in *intensity,* at the same time as they change in value. The intensity of any color on the wheel can also be reduced by mixing it with its *complementary* (its opposite on the wheel). For example, red can be weakened or grayed by adding green.

All around us, we may observe changes of intensity in familiar colored objects. The leaves of the trees go through two cycles of intensity each year. The first leaves of spring are of an intense yellow-green. As the summer wears on, they gradually lose this first brilliance, and become increasingly a grayer-green. With the first frosts of autumn, the same leaves suddenly become intense again. This time their hue also changes and they appear as intense yellows, oranges, and reds. Again, they begin to fade. By mid-winter they turn gray-brown, and are ready to rot into dark gray leaf-mold.

The color in a pair of "blue jeans" is most intense when they are new. With repeated washing, the color becomes dull and faded, less intense. The color of a house is at its maximum intensity when freshly painted. The colors of a landscape lose their intensity when seen through fog or smoke, and regain it in brilliant sunlight. Colors in the distance are reduced in intensity, as compared to the same colors seen close-up.

As part of your practice with color, experiment with changing the intensity of all your colors in varying degrees. Do this on your palette, or on scraps of paper. You'll be surprised how many different effects your patches of practice strokes will show. This exercise will help you to fix in your mind what you have just read about the third dimension of color.

You will see, in the following pages of this section, that the color in practically every brush stroke in each painting is a different combination of two or more colors. The intensity of each color has been adjusted by mixing it with others. It is particularly important to learn to control intensity if you plan to paint landscapes, still lifes, or portraits. Nature is full of subtle grays. The sky is not simply a blue from the tube, nor grass a ready-mixed green.

We have discussed the three dimensions of color separately, in order to make each one clear. However, you must realize that when you are actually mixing color as you paint, you rarely change *just one* of its dimensions. In most cases you alter the hue, value, and intensity simultaneously. For example, if we mix yellow with blue-violet, we create a bluish green that is lighter and grayer than the original blue-violet.

A summary

In the first part of this section we showed you that color has three dimensions: (1) HUE, (2) VALUE, (3) INTENSITY. Before going on, let's briefly review these dimensions.

1. Hue: What we commonly call the name of a color. Red, yellow, blue, blue-green, etc., are *hues*.
2. Value: The lightness or darkness of a color.
3. Intensity: The strength or purity of a color.

As mentioned above, when you mix colors for a painting you will usually be changing hues, values and intensities all at once, as you dip your brush from one color to another on your palette.

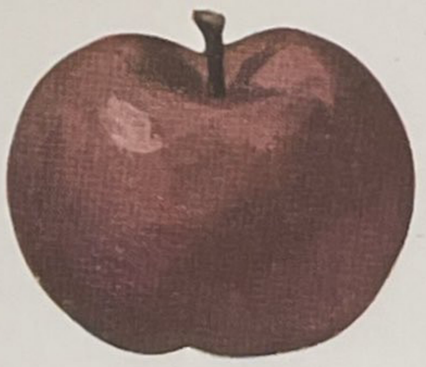
There is no need for you literally to stop and measure the change of hue, value and intensity each time. With practice you will soon know what effect one color has on the other, and mixture of colors will become as familiar and automatic as writing one word after another to create a complete sentence.

However, if you understand and recognize these dimensions, you will be able to create the color effects you want, quickly and effectively. Therefore, be sure you understand what we have explained so far, before proceeding.

What follows

That which has gone before has dealt with the basic structure of color. The text which follows will show you how to apply this knowledge to the actual pigments you mix and use in your painting. We will demonstrate how one color affects another, how certain colors appear to come forward in a picture, and how others recede. We will show how colors change under different light conditions. The emotional effects of color will be covered, also the control of moods, and the use of color proportion in a composition. Following this you will see demonstrations which explain the important steps in painting landscape, still life and portrait.

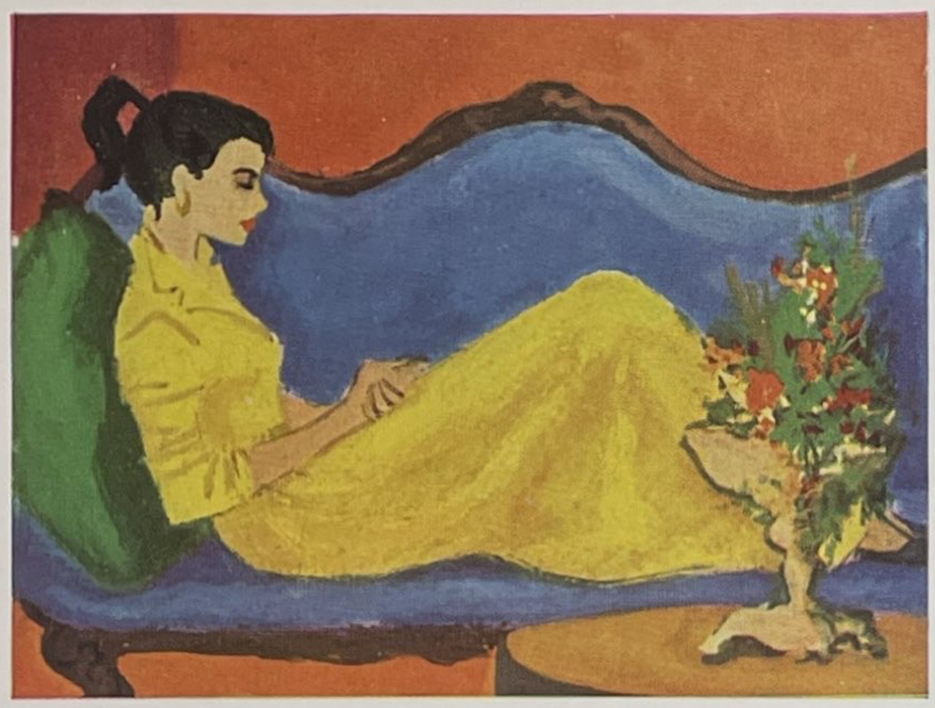
This red apple was painted in full intensity, with pure pigment as it came from the tube.



Here a moderate amount of gray has been added to reduce the intensity. The hue, however, is still red.

Sufficient gray has been added to this apple to make the color barely perceptible. There is very little intensity.

Starting with full intensity colors at the left end of the bar, we have gradually reduced the intensity of each color by adding more and more gray as we painted toward the right, until we reached pure gray. In this case we have changed only the intensity, not the value. Squint your eyes, and notice that the value remains the same throughout the entire length of the bar.



Here is a picture full of high intensity colors. Many have been made with pure pigment just as it comes from the tube.

In this picture we have taken the same hues that you see in the picture at the left, and lowered their intensity by adding gray to each color.

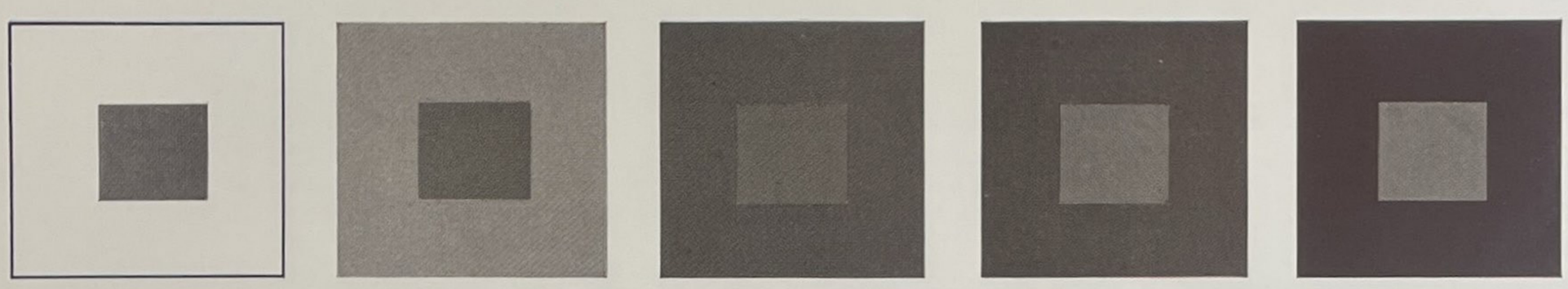
This sunny circus scene contains intense reds, yellows and blues. The shadows, as well as the lights, contain pure strong colors.

Here is the same picture painted in low intensity. Compare it to the one at the left. In the painting above, each color has been grayed.

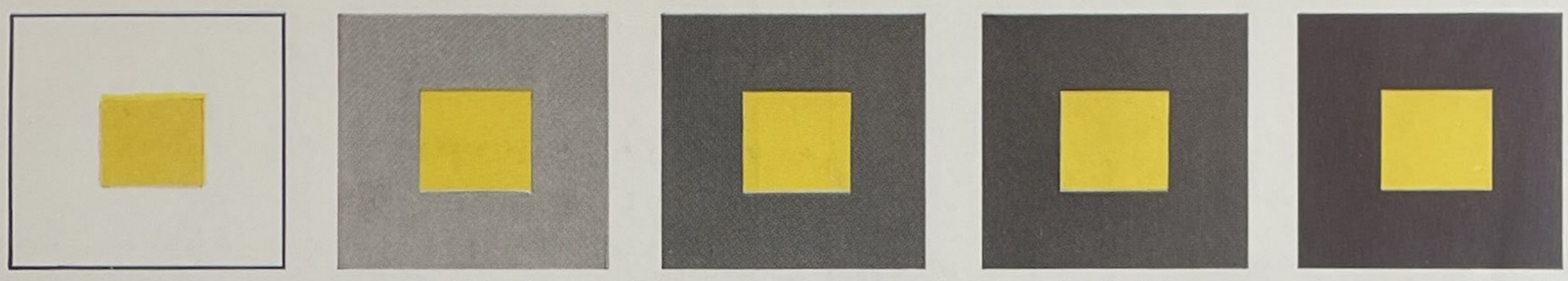
One color affects another

Whenever you use one color in a painting, it will always be affected by the colors around it. As you gain painting experience, you will be able to anticipate these effects of one color on another.

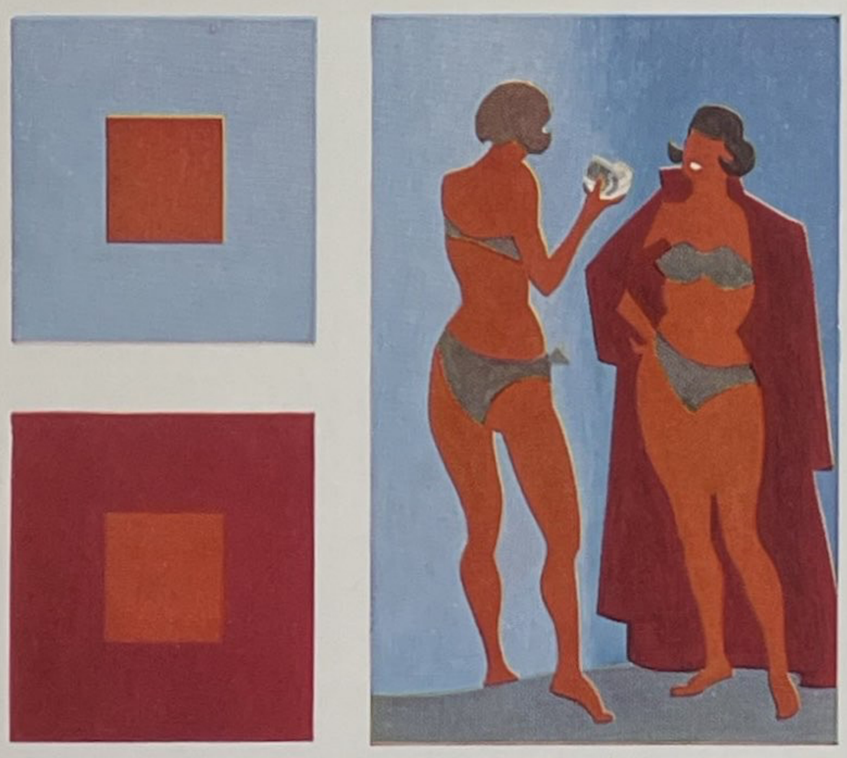
For example, when you first lay in your shadow tones on a piece of white paper or canvas, they may appear too dark. This is due to the white area around them. As soon as you have covered the whole canvas, the shadows begin to take their proper place and appear just right. This illusion of a change of values is the most common problem for the painter in handling color. However, the hues and intensity of every color are also affected by the colors next to it. You will find that painting is actually a process of making constant adjustments of hue, value, and intensity.



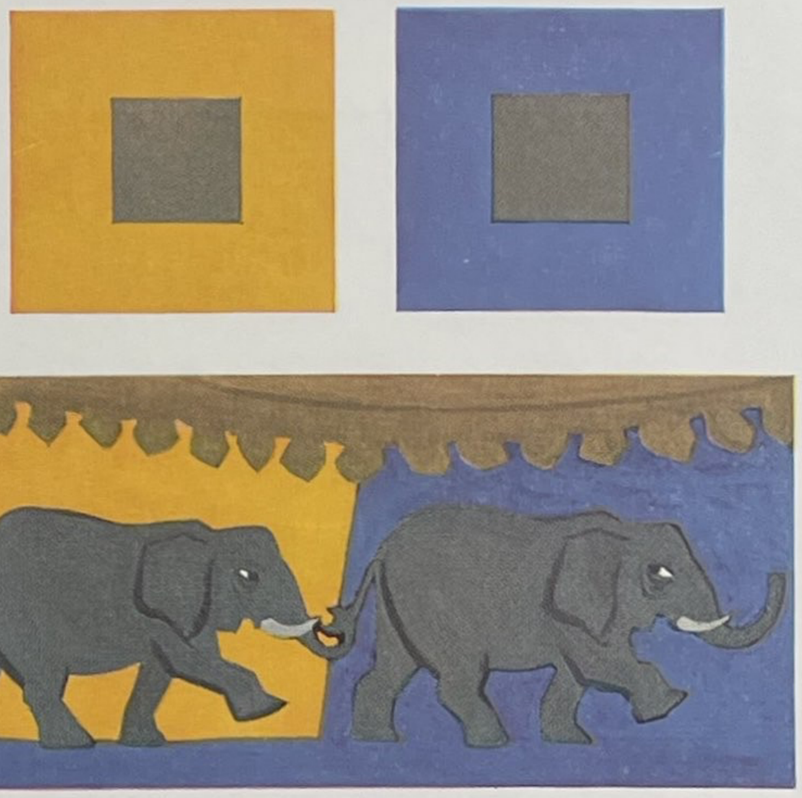
This series of five squares-within-squares illustrates how variations of value can affect one another. The inner squares are of the same value from left to right; only the background values are changed. Notice how much lighter the inner square on the extreme right appears, in contrast to the one on the far left.



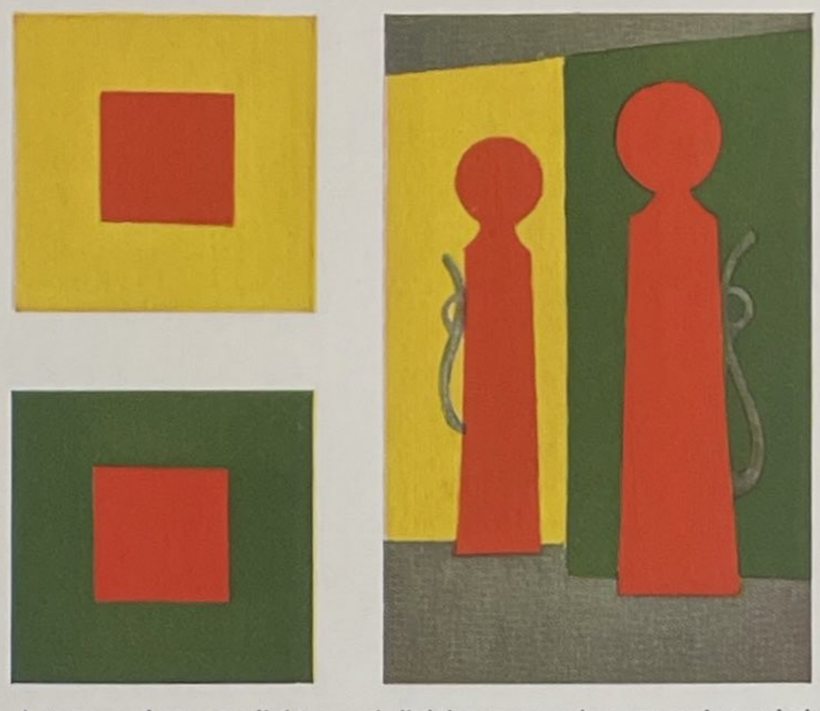
The illusion demonstrated above in gray tones is similar when we use color. All these yellow squares are exactly the same, but as the background becomes progressively darker, the yellow squares appear to become lighter. This principle can be used effectively in emphasizing, or subordinating, any area in your picture.



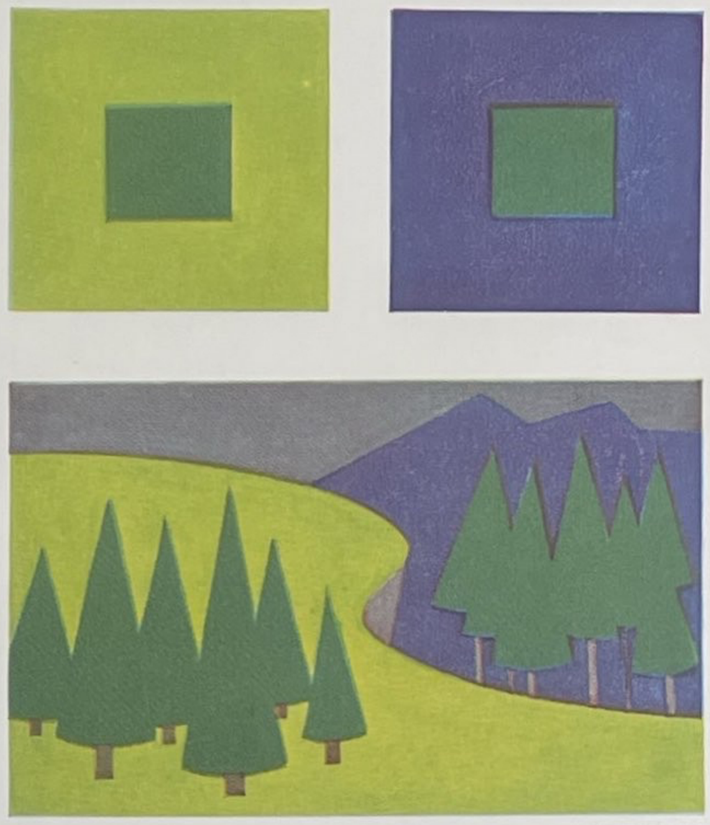
Both figures were painted with the same color, but the red looks darker and cooler against the light blue sky; lighter and warmer against the darker red robe. See how this is emphasized in the squares on the left.



Both elephants are the same gray. The one at the left appears to be a dark, bluish gray, the other one a light, yellowish gray. The color squares demonstrate the same illusion.



A strong red appears lighter, and slightly orange, when set against a dark green. Opposed to a yellow, the same red appears darker and cooler.



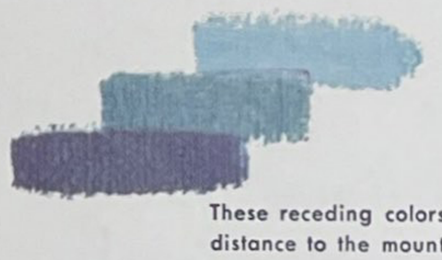
The small inner squares, and the two clumps of pine trees, are all the same color. Notice how much lighter and greener they appear against the darker backgrounds. Against the lighter yellow-green, they seem much darker and bluer.

Advancing and receding color

Every painter should be familiar with the way in which some colors appear to come forward, while others seem to recede. He can use this knowledge either to stress or subdue the feeling of depth in his pictures.

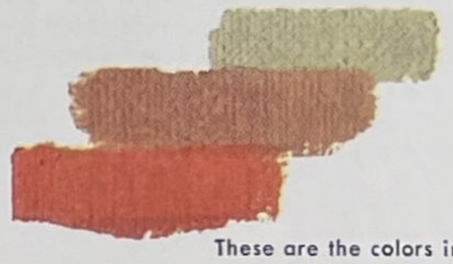
Warm colors, like reds, oranges, and yellows, actually appear nearer to us than cool blues, greens or violets, seen from the same distance.

In addition to becoming *cooler* with distance, colors also become *lighter* and grayer, or less intense. This is due to the atmosphere between the object and our eyes. The use of these color-changes to create the illusion of distance in a painting is called *aerial perspective*. The picture below demonstrates how this principle works in a painting. Although the earth in the plowed field is the same throughout, the foreground *appears* most intense in color. See how the color gradually becomes grayer, cooler, lighter, in the distance. The same principle has been used to create the illusion of great distance between the nearest and farthest hills and mountains.

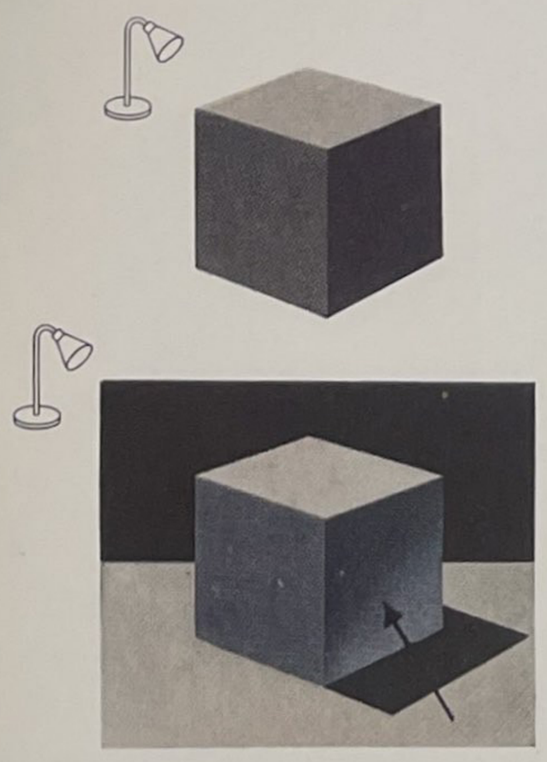


These receding colors are used to give distance to the mountains at the left.

Here are the greens in the rolling hills.



These are the colors in the plowed field.



Color under different light conditions

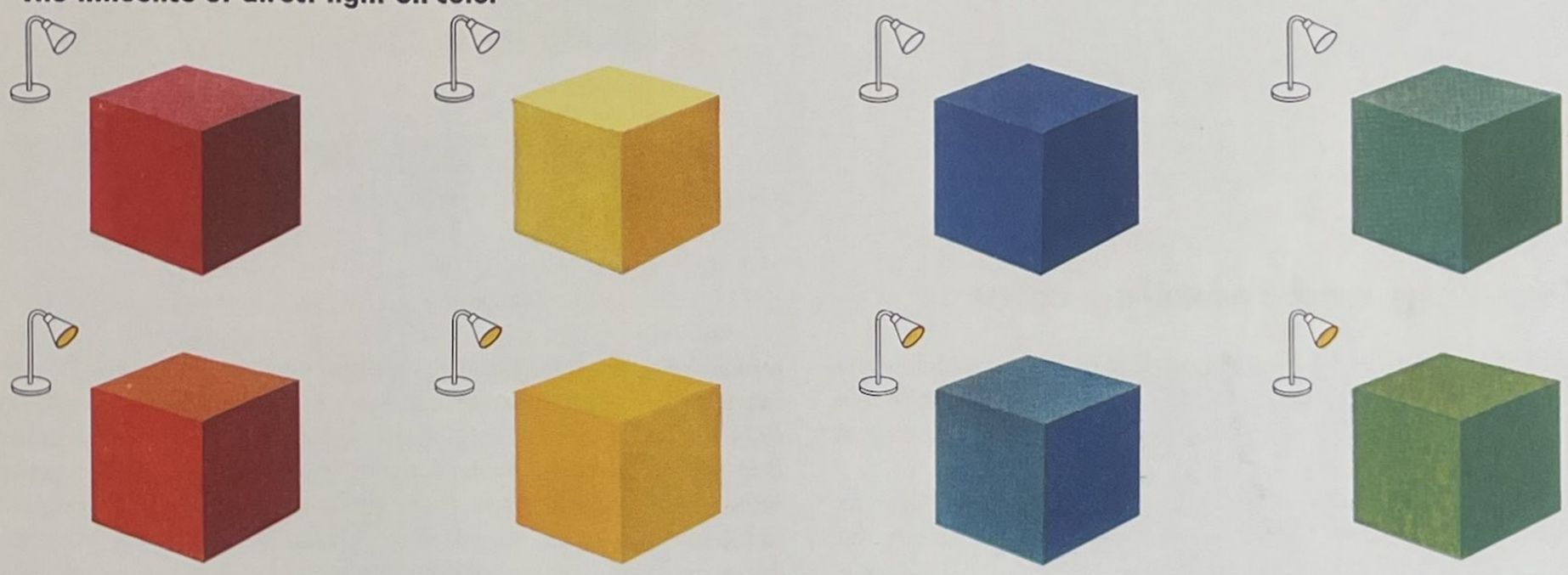
The color of every object you see is determined by three important factors: 1) the local color of the object; 2) the color of the direct light under which the object is seen; 3) the local color of any surfaces which reflect light back upon the object.

At the left, above, is a solid cube showing the direction of the light, and its effect on the three visible planes. Below this cube is another cube, set on a reflecting surface. The light source is the same. The shadow plane at the right is the only plane receiving *reflected* light.

All the colored cubes below retain the *same value* relationships in the light, half-tone, and shadow planes, regardless of the color of the light under which they are seen. To paint the cubes illuminated by yellow light, we added a small amount of yellow pigment to the colors of the top and left vertical planes. If we added the same amount of red, orange, blue, or green, we would create the illusion that the cube was seen under red, orange, blue, or green light.

In the bottom row of cubes, the color of the shadow plane showing reflected light depends on three factors: 1) the color of the direct light; 2) the local color of the reflecting surface; 3) the local color of the plane receiving the reflected light. To paint the shadow plane showing reflected light, we added a small amount of *reflecting surface color* to the shadow plane.

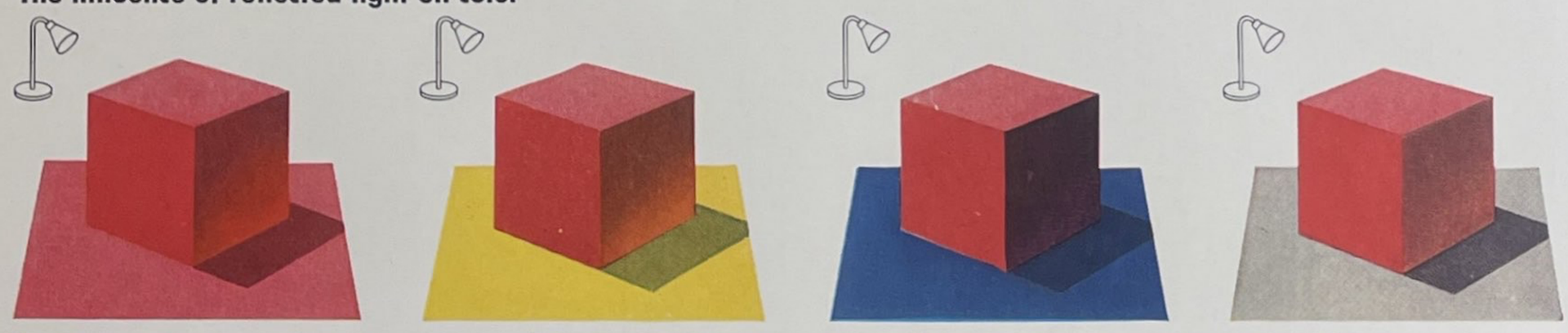
The influence of direct light on color



The cubes in the upper row, above, were dipped in buckets of red, yellow, blue, and green paint, and placed under a neutral white light. This light reveals true local color accurately. You will notice that within each cube, the colors of the planes differ slightly. The true local color, the color in which the cube is dipped, is seen best in the vertical plane at the left, where the color is least affected by strong light or shadow. In the lower row, the same cubes have been placed under a *warm yellow light,* similar in effect to sunlight, or the warm light from a lamp bulb. This change in light affects the colors in only the top and left vertical planes.

Compare the planes of the cubes in the upper row with the same planes of the cubes in the lower row. Notice that the colors of these planes under the yellow light are definitely warmer than under white light. To mix a paint which would demonstrate the effect of yellow illumination, as shown in the lower row, we simply added a small amount of yellow to the original local colors of the two planes, as seen in the upper row. Since none of the yellow light strikes the shadow planes in the lower row, the *shadow planes* of both rows of cubes are the same.

The influence of reflected light on color



Here is a red cube, placed on four reflecting surfaces of different colors. The cubes are illuminated directly by white light. In all the cubes, the top and left vertical planes are exactly the same. But notice what has happened in the *shadow planes.* They are modified by the colored light from the reflecting surface. The red reflecting surface intensifies the red color of the shadow plane. The yellow reflecting surface creates an orange tone in the shadow plane. The blue creates a violet tone. The gray reflecting surface is neutral, and therefore the reflected light does not change the hue of the shadow plane. In each case, the top and left vertical planes are unaffected by this reflected light. The artist must be aware of this effect of one color on another, and make it work for him in all his painting. In this demonstration, we have used simple cubes. Remember, though, these same principles apply to everything—clothing, flesh, a building, the side of a hill, any situation in which we have direct and reflected light.

This still life is struck by a warm yellow light that might be either sunlight, or warm artificial light. Each plane in light is warm, each shadow area, cool. Although the compote is actually white, in this light it appears slightly yellowish.

In this picture the light is cool and bluish, like the light that would come through the window on the north or shady side of a building. The light planes are cool, the shadows relatively warm.

Different lights create different colors

Before you start any painting, decide first on the *effect* you wish to create, then on the colors needed to produce this effect.

Make it a practice to study the color differences caused by various types of lighting, such as sunlight, artificial light, moonlight, fire light, the light on a cloudy day, etc. As you view the scene under these different lighting conditions, analyze it. Picture in your mind's eye the colors you would use to paint it. Study it through squinted or half-closed eyes. This eliminates any confusing details and makes it easier to compare the hue, value, and intensity of each color. On this page, you will see that there is no such thing as a ready mixed flesh color, or sky color, or grass color. Each different type of lighting creates a new set of colors. The only way to know and understand what happens to color under different conditions is to observe and remember the color characteristics of each type of illumination.

The barn casts a shadow over the fence and farmer. The cool bluish light within this shadow comes from the sky. Only parts of the grass, rocks and tree are struck by direct warm sunlight.

This is how the scene would look in direct sunlight. To create this effect we use warm colors such as red, yellow and orange in the light-struck planes. The shadows contain cool blue and violet tones.

The emotional effect of color

Colors have a strong effect on our emotions. They can create almost any kind of mood. According to where and how they are used, they can make us feel cheerful or depressed, excited or soothed, filled with longing, or at peace. In paintings, quite apart from subject matter, drawing, or design, they can be used to affect the emotions of the viewer in any way that is required.

Because of this, it is vital for you to learn as much about these effects as possible, to gain control of them, and to take full advantage of them to create the mood you want in your pictures.

You are probably familiar already with the more usual associations between color and emotion, such as red suggesting excitement or heat; blue, calm or distance; green, nature or coolness; yellow and orange for sun and sunshine; violet, mystery. Later we discuss these associations and color symbolism in detail.

Now, open your own awareness much, much further. See the extent to which color is used in all art forms to induce mood and emotion. In the theater you see it used for lighting and costumes, for atmosphere and setting – even for characterization. For instance, pink may be used for scenes of sentiment and romance, a green light for ghostliness and horror, blue to suggest moonlight and evening. Bright, warm colors in light and costumes are used for excitement and gaiety, and cool grayed ones for a mood of stillness or despair. Movies use colors in the same way, and so does color television.

The visual art forms, however, are not alone in using the effect of color. Look at this excerpt from *Gone With The Wind,* by Margaret Mitchell, and see how strongly we react to a written description of color.

"Spring had come early that year, with warm quick rains and sudden frothing of pink peach blossoms and dogwood dappling with white stars the dark river swamp and far-off hills. Already the plowing was nearly finished, and the bloody glory of the sunset colored the fresh-cut furrows of red Georgia clay to even redder hues. The moist hungry earth, waiting upturned for the cotton seeds, showed pinkish on the sandy tops of the furrows, vermilion and scarlet and maroon where shadows lay along the sides of the trenches. The whitewashed brick plantation house seemed an island set in a wild red sea, a sea of spiraling, curving, crescent billows petrified suddenly at the moment when the pink-tipped waves were breaking into surf. For here were no long, straight furrows, such as could be seen in the yellow clay fields of the flat middle Georgia country or in the lush black earth of the coastal plantations."

Applications in other fields

In many other forms of art, too, color is drawn upon to create emotional response. In hospitals, rooms are painted in soothing colors where patients are to convalesce or wait, and in more stimulating colors where they need to be cheered and encouraged back into activity. In factories, stores, and organizations of all kinds, colors are used as backgrounds to enhance products, induce well-being for employees, and in general increase the customer's desire to acquire products. In the fashion world, a garment in a particularly appealing color will sell out immediately, while the same garment in another, less enticing color, will not move off a rack. The colors used in travel folders can affect us so strongly that we yearn to visit a place.

Weather affects us powerfully, also, with its shifting colors. A clear day in which all the colors of earth and sky are brilliant, warm, makes us optimistic, gay. A day with little light, and therefore little color, can lower our spirits for no other reason. On a brilliant, hot day a pool of cool blue will look wonderfully inviting. See how the same color can create an opposite effect, however. Imagine the same cool blue pool on a cold, gray day. The warm red of a fire on a hot day will make us feel stifled but the same red on a gray day will make us feel cozy. By using the varying colors of the seasons, too, you can re-create the hopeful feeling of spring, the finality of fall, the laziness of summer, or the bleakness of winter, no matter what season it really is. The effects of color are too numerous to list, so look around you and observe for yourself as many as you possibly can.

Make color symbols consistent

You will find it helpful to study paintings, as well, for their color content alone. With experience, you will soon learn that certain artists are so consistent in their choice of colors that you could recognize their work from a distance, without even seeing the subject matter on which it is based. Try to visualize, as a test, how ineffective a painting by Rembrandt would be if the harsh, clashing colors of Van Gogh were substituted for the warm, low-keyed reds and browns. Note how other painters, like Ryder, Caravaggio, La Tour, and El Greco, have chosen palettes and colors that invariably give an aura of mystery to their work. In sharp contrast to these men is the work of such painters as Dufy, Bonnard, and Monet. Their bright, high-keyed colors make the majority of their work seem festive, full of light.

The artist should have a good understanding of color associations and symbolism and keep them very much in mind when he plans a painting. In one picture he may want to create a light and airy mood. In another he may wish to surround his subject with a somber, brooding atmosphere of mystery. Certain colors immediately suggest certain moods to the average person, so each of these paintings calls for the use of different colors. In every picture the artist must apply his knowledge of color and how people respond to it if he is to achieve the effect he wants.

You may, of course, take liberties with the accepted and credible but you should always have a good reason for doing this. Sometimes you will find situations where the natural color of the subject matter contradicts the effect that you want. This may be due to a number of elements, such as the color of the light, or surroundings, etc. The circus scene with the elephants, referred to on the opposite page, is an example of this. Therefore, before picking up your brush and starting to paint, you should always ask yourself a number of questions. Some of them should be: Are these colors typical of the subject? Do they create a warm or cool effect? Which effect do I want? What colors might suggest the right mood? Are the colors in good taste? Should some colors be grayed, others made more intense? Should the over-all effect be colorful or muted?

It is wise to make this rule for yourself and keep to it faithfully. Before you even squeeze your colors on your palette, try to visualize the effect you want and how you are going to create it. If you follow this rule you will be in a good position to use color to its fullest advantage.

Here, the artist wanted a gay, sunny mood. The picture was painted in a high value key, with pure intense color dominating the scene. The swatches below the painting are typical colors found in the picture.

This is the same scene painted with colors that are factual and objective. The artist simply matched the colors that he saw, as accurately as possible. A color photograph would be very similar in color to this painting.

Color creates different moods

The paintings on this page demonstrate how you can use color to produce a definite *mood* in your picture. It is important to choose colors which will strengthen the other elements in your picture – subject matter, drawing, and composition. For example, the light, gay mood of a party, circus, or wedding, suggests a high key painting full of bright colors. Dark, low intensity colors would be better suited to a scene of mystery or tragedy.

Often, you will find that the actual colors in the real scene do not coincide with these principles. For example, a certain view of a circus scene may be dominated by dull gray elephants, seen against the dark blue or violet shadows of a tent, or the dull brown earth. The clothing of the trainers, or handlers, may consist of dull gray cover-alls. From the standpoint of color, the scene actually suggests drabness.

If your painting is to have a gay, carnival spirit you must either select another, more colorful scene, or change the colors to gayer, more festive ones. In any case, be sure that *you* control the colors in the painting, to create the mood you *want*.

In this case, the artist chose colors which were very low in value and intensity, to create a mood of darkness, gloom, and mystery. Compare the swatches beneath this picture with those below the first one.

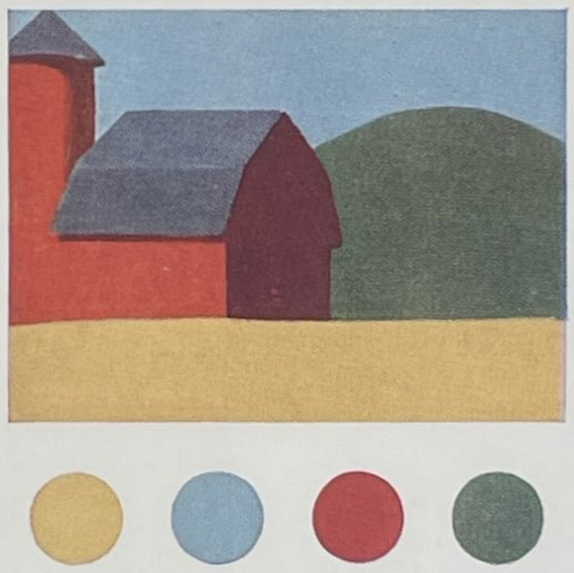
Color proportion

Color in paint, like color in decoration or dress, can be abused, or used in good taste. Although all of the hues in the color wheel are available for use in your pictures, you will probably never employ all of them, at full strength, in a single picture. If you study the colors in good paintings or illustrations, you will be surprised at the limited range of hues that you find in most of them. In fact, one of the major problems for the beginner in colors, is to avoid a tendency to put every pigment on his palette into each picture.

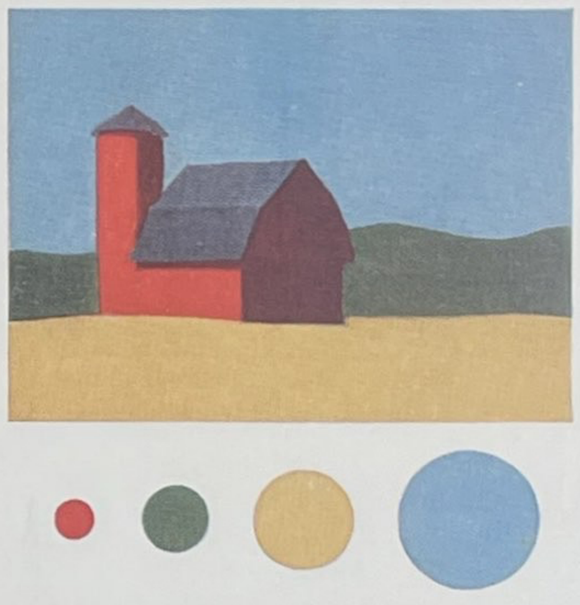
The experienced artist uses fewer hues, but takes advantage of the infinite number of color differences which can be created by variations of *value* and *intensity*. For example, a red can be varied to produce a pink or brown.

Normally, bright, advancing colors serve their purpose best in small areas to attract attention — as accents. A good decorator uses this principle skillfully in planning an attractive living room. Background colors are quiet, livable, and neutral. Against such backgrounds, a sparkling accent, or small brilliant area of color is most effective. The same principle applies to paintings. Don't use several equally intense colors in the same-sized areas. They will compete with each other, and their individual effectiveness will be canceled out.

The color proportion, or distribution, in this picture is very disturbing. All four colors — red, yellow, blue and green — are equally intense, and fight each other for attention.



Changing the *value* and *intensity* of some of the colors helps to eliminate confusion, and improve the picture.

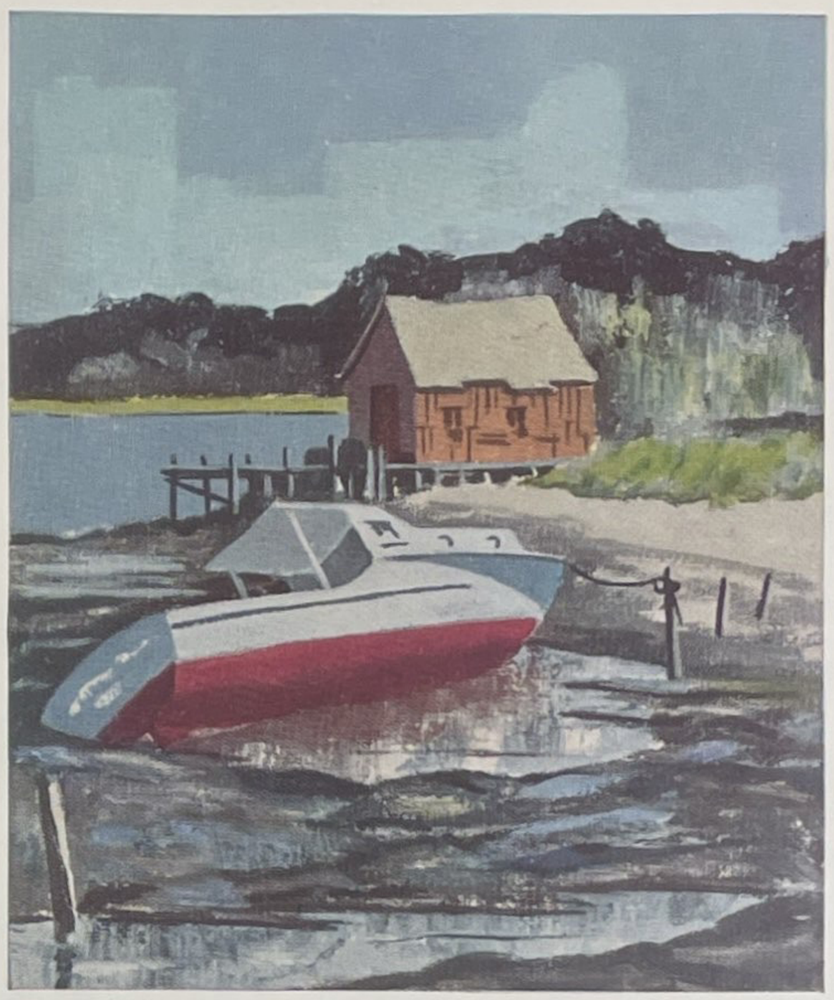


Finally, by changing the size or proportion of the areas, we create a pleasant and well balanced color scheme, with the barn as the center of interest.

An overpowering amount of yellow has been used in the picture at the left. Yellow is the most advancing of all hues, and hence one of the best accent colors; but *all* accent is *no* accent. In the picture at the right, the yellow is confined to the girl's skirt, and is in good proportion to all other colors in the painting. It now stands out as a pleasing accent.

At the left, is a typical misuse of color. Because the man's jacket is red, the beginner painted almost all of it with pure red from the tube. This same red, repeated monotonously in the background, overwhelms the color in the face. At the right you see a more tasteful way to paint the same subject. A few, small accents of pure red are enough to show that the jacket is red. Now, the head stands out clearly against the less intense color in the jacket and background.

In painting this picture, the artist added a small amount of *yellow* to all the colors on his palette. This creates an over-all effect of great *warmth*. The swatches in the bottom row show how this addition of yellow affects the pure pigments in the top row.



Here is what the same picture would look like if we added a small amount of *blue* to our usual palette of colors. Now the whole picture is cool.

Set palette

One of the simplest ways to achieve color harmony, or unity, in your picture is to paint it with a *set palette* of colors. This can be done in various ways. The pictures on this page show how to create color harmony by adding a small amount of any *one* color, or gray tone, to *all* the others on your palette. Note that the added color has greater effect on its "complementary" (color opposite on the wheel), less effect on the colors adjacent to it. You can vary this procedure by adding one color to all the light areas in your painting, and another color to all the shadows. These added colors may be warm, or cool, depending on the effect you desire. If you wish to emphasize one color in your picture, the color you choose to add can be mixed with every other color, *except* the one to be accented.

This principle can be extended to emphasize two or more colors. You can create value harmony, and establish the key of your whole picture by adding a light, middle, or dark value of any hue to each color on your palette. Since the colors which you add to your regular palette can vary in hue, value, and intensity, the number of combinations is endless.

A set palette is not suitable when the chief objective is to obtain an accurate color record of nature. In that case, you should match the hues, values, and intensities of each color in your subject, as closely as possible, using any and all combinations of colors. If you wished to paint the same subject with a set palette, you would add a small amount of unifying color (or colors) to each of the colors in the realistic painting.

When using a set palette, you must be consistent throughout the entire picture, or the whole purpose of creating unity and harmony by this means is defeated.

This time, we have lowered the intensity of the colors by adding a small amount of gray to each one. The color effect is soft and muted.

Courtesy True Magazine

This painting by John Atherton is an excellent example of color used in an *imitative* or *naturalistic* way to create an illusion of reality. The hues, values, and intensities of the colors are based very literally on those the artist saw in his still life objects. The *forms* are almost photographically real; it would have seemed inconsistent if the *colors* were not equally accurate.

You can use color in two ways

The colors in this painting, also by Atherton, have been used in an entirely different way than in the picture above. These colors are the product of his imagination, rather than the record of what he saw in front of him. This is an *inventive, creative* use of color. No one ever saw these objects as they appear here. The forms are *based on* natural objects, but they have been modified and adapted by the artist to suit his design. The *colors* have been used in an equally arbitrary way.

Color mixing with primaries

A good way to learn how to make the colors which you'll use in your paintings (or see in your subject) is to sit down and practice mixing colors with the three primaries — red, yellow, and blue.

You'll find this very helpful even if you've done a fair amount of painting before. It will develop an awareness and control of the three dimensions of color — hue, value, and intensity. Follow these simple directions and suggestions. Once you learn how to use the primaries you will find it easy to work with any number of other pigments.

The primaries — red, yellow, and blue

Let's begin with two fundamental observations:

1. The three primary colors — red, yellow, and blue — cannot be produced by mixing any other colors.
2. Using only the three primaries, plus white, you can produce nearly every other color you need for a painting.

We have chosen Alizarin Crimson, Cadmium Yellow Pale, and Ultramarine Blue as our primary colors because they are very familiar to most artists and are readily available. Other reds, yellows, and blues could also be used, but the ones we have selected will demonstrate the mixing principles very clearly.

At this point, lay out the four colors — red, yellow, blue, and white — on your palette. The illustration at the top of this page shows a reasonable amount of color to squeeze out. *Don't be stingy when you set out your paint.* These pigments will remain usable for a week or more.

Fill one of your palette cups with some painting medium. For these exercises you can use a mixture of one-third turpentine, one-third linseed oil, and one-third damar varnish. The purpose of this medium is to thin your oil paints, and you can add any amount you find necessary for this. However, we also recommend that you use at least a few drops in *all* paint mixtures when you want to hasten the drying of your pictures.

For mixing colors you can use either your painting knife or a brush. The knife is better when you want to mix a large quantity or to be very accurate in preparing a specific color. The brush is easier when you are making subtle changes in a mixture as you are painting.

Secondary colors

Combining *two* primaries will produce a *secondary* color. The three secondaries are *orange, green,* and *violet.*

To mix *orange,* pick up some of your yellow and place it in the center of your palette. Now wipe your brush or knife.

It isn't necessary for your brush to be thoroughly clean when you pick up a little of another color. Just swish your brush in some turpentine and wipe on a rag. Only when you switch to a completely new color mixture will you need to clean the brush more thoroughly. In that case, wash it in the turpentine, wipe on a rag, and repeat this a number of times.

Now pick up a small amount of red and mix it with your yellow. The proportions shown on page 20 will help you. In any of your mixing procedures, *add the lesser color in very small amounts at a time* until the mixture produces the color you want. This is one place where you should be stingy.

Next, dip your brush (or knife) lightly into your painting medium and stir a little of this into your mixture. Now brush a few strokes of your orange on a sheet of Canvaskin or a canvas panel. This orange will not be as pure or intense as the paint from a *tube of Cadmium Orange,* but in actual painting practice you will find it strong enough.

The secondary hues — orange, green, and violet — can be produced from the primary colors. The circles of color represent the approximate proportions used to make these mixtures.

Next, for *green,* combine some yellow and approximately the same amount of blue. When you're satisfied with the combination, add your medium and place a few strokes of this paint on your Canvaskin.

For the third color, *violet,* combine equal amounts of red and blue. Violet is such a dark color that we added just a bit of white to our example so you could see the hue more clearly. Place a few strokes of this mixture on your canvas.

Intermediate colors

This term refers to hues mixed from *two* primaries, but leaning strongly toward *one* of them. The intermediate colors are *red-orange, yellow-orange, yellow-green, blue-green, blue-violet* and *red-violet.* See the color wheel on page 2 of this section for examples of the six intermediate colors.

To mix *red-orange,* start with yellow and add about half as much red. Place a few strokes of the red-orange mixture next to your orange mixture and then put some Alizarin Crimson next to them and compare all three.

The remaining five intermediates are produced in the same manner. In each case, place your mixture between sample swatches of the primary and secondary colors that it is related to. (See the color wheel.) Compare the three colors to be aware of the differences and similarities.

Yellow-orange contains mostly yellow, plus the smallest amount of red that you can pick up with your brush or knife.

By mixing yellow, at the left, with blue, at the right, in different proportions, we produce these green tones — yellow-green, green, and blue-green. The yellow-green and blue-green are called *intermediate* colors.

Yellow-green contains mostly yellow plus a very small amount of blue. *Blue-green* is two parts blue to one part yellow. *Blue-violet* is two parts blue and one part red. *Red-violet* is four parts red to about one part blue. Again, these last two are so deep in tone that you might add a bit of white to each mixture to see their hue more clearly.

This group of primary, secondary, and intermediate colors completes the color wheel shown on page 2. Remember, each of these secondary and intermediate colors contains only *two* primary colors. Along with the primaries, they represent the basic colors having the greatest intensity or purity.

Some thoughts about color

Now, before we go any further, let's reflect for a moment on a few basic facts about color. Although we have given you proportions for making colors, we are not suggesting that you mix paints by formula for your pictures. Some fundamental guides are extremely helpful, but before you become a slave to "one part red and two parts yellow" you should realize that the most important guide of all is your reaction to the colors around you — your own color taste.

Color can make your pictures successful or it can mark them instantly as the work of an artist lacking the knowledge and ability to use color intelligently and artistically. The people who see your work can be just as depressed or exhilarated by its color as they can be by the weather. You must decide early in the development of your picture just what color "climate" you want to create.

To use color effectively you must possess a sound knowledge of its three parts — hue, value, and intensity. Besides having a good understanding of these basic principles and applying them in your pictures, you must also make sure that the colors you choose are appropriate to your subject and consistent with the concept of your picture.

Suppose that you are painting a very realistic or naturalistic picture of a pine tree. It makes sense that the colors you use should be just as realistic or natural as the actual tree is. On the other hand, if you are interpreting the tree in a more personal way and are taking deliberate liberties with the design and drawing, your use of color should be just as free and imaginative.

The color reproductions of the paintings on page 18 are excellent examples of color used in its most effective way. In each case the artist's approach to color is based on his original concept of the painting.

In the painting of the fish the artist's main interest is in creating the illusion of reality. He is reporting very literally what he saw. Because he drew the forms just as they actually appear, he used his color in the same way.

Try to imagine this picture with the fish's spots a bright red. We are sure you will agree that no matter how beautiful a red it might be, or how well it related to the rest of the picture in value and intensity, it would be a very incongruous addition to an otherwise completely factual picture.

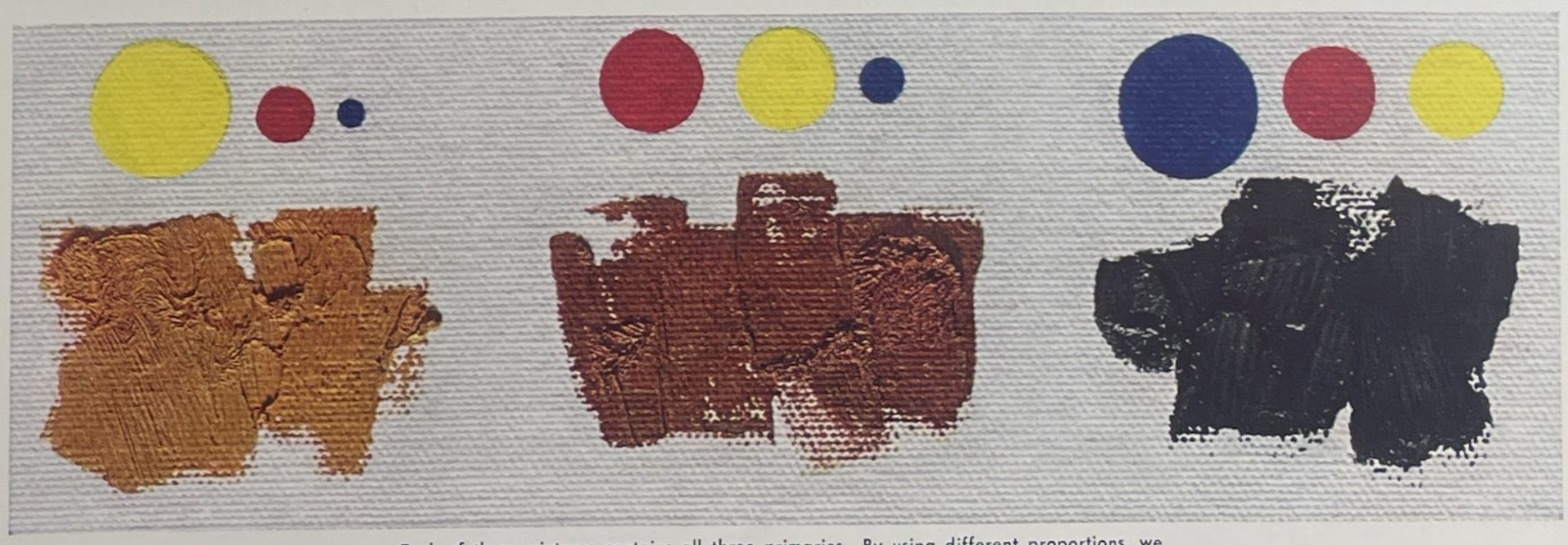
In the second painting the artist has taken his forms and designed them in a very personal way. He was not trying to make a realistic picture, although he used real objects as a starting point. His purpose here was to create a highly individual and original design of interesting shapes, textures, and color combinations.

Since the artist was not trying to paint an illusion of reality, he no longer needed to represent the objects with their factual color and was able to select and use his color in a more personal and arbitrary way. For instance, he found the strong contrast of the yellow against black and gray exciting, and did not hesitate to use it even though this color combination was not present in his subject.

As you paint more and more pictures you will find your work developing a distinctly personal style. With experience and increased confidence you, too, will feel free to give color fuller rein — not feel compelled to copy what you see, but originate, invent and create exciting color combinations.

The success of a picture depends very much upon the psychological effect it has upon the people who see it. If they see color and color patterns which please them, they are attracted to the picture consciously or unconsciously. It is your job to see that they are attracted.

If you will observe paintings reproduced here in your textbook or in museums, you will find that in almost no case does the artist use only pure colors direct from the tube, even if the intention is to produce a bright, colorful picture. Throughout the paintings



Each of these mixtures contains all three primaries. By using different proportions, we produced colors similar to Yellow Ochre, Burnt Sienna, and Black. Many other variations can be made by combining all three primaries.

there will be passages of grays and grayed colors. In fact, if too many intense colors are used, they can cause the eye to react in such a manner as to make the picture appear rather gray. An understanding of mixing grays is therefore very important to the success of your pictures.

Begin now to be aware of the subtlety of color in nature, of its muted tones that make a sudden bit of bright color stand out as a focal point.

At the same time, be aware of the color that exists in some things we consider colorless. A flat white wall or ceiling has color. Rocks, dirt, or winter trees have color. These more subtle hues can contribute much to a painter's work, whether he wants to capture the quality of nature as he observes it or to create a purely personal vision.

Our purpose in demonstrating these color mixes is not to make you a "color chemist," but to help you understand how to mix the colors that you see around you. Once you understand the principles, you must determine for yourself just what proportions of color you need in any mixture.

Combining all three primaries

When all three primary colors are combined in any proportion, the colors produced are less intense than the primaries, secondaries, or intermediates. This combination of all three causes the colors to neutralize each other. For example, if we combine red and yellow to produce orange, and then add a bit of the third primary, blue, it will reduce the intensity of the orange. If we combine yellow and blue to make a green, and add a bit of red, it will reduce the intensity of the green. Thus, any of the previous mixtures, or the primaries, can be reduced in intensity.

Actually, what we are doing here is adding a *complementary color* to reduce the intensity — a complementary color meaning one that is opposite on the color wheel. Red and green are complementary. Orange and blue, or yellow and violet, are complementary.

When you are using a fuller range of tube colors, rather than just these three primaries, keep in mind that the color you use to gray a mixture need not be *exactly* opposite on the color wheel. The intensity, or brilliance, of a color will be reduced as long as the color you add contains *some* of the complement. For example, you can reduce the intensity of orange by adding violet, blue, blue-green, green, or yellow-green — for each of these contains some blue. Just keep in mind that each will produce a slightly different effect.

You will find it necessary to reduce the intensity of colors frequently in painting. Often it will be just a touch of a complementary color that is needed, so avoid jabbing too vigorously into your piles of color. Simply touch the tip of a brush or knife to the desired pigment and mix it into your color. It is better to repeat this step a number of times than to overdo it by alternating one color and then the other until you pile up more paint than you need.

As we add small amounts of a complement to a color, it will not radically change that color. It will simply reduce the intensity. But if we continue to add the complement we can change the value and intensity to a point where we hardly recognize the original color. Thus, we can change our yellow to represent Yellow Ochre, our red to produce Burnt Sienna, Brown, or Burnt Umber. We can even combine the three colors to make black.

Try your hand at simulating some of these colors, using the examples on page 20. Don't be concerned if your mixtures aren't exactly like the ones in your book. You only need to approximate them.

To simulate *Yellow Ochre,* begin with your primary yellow; to this, add just a bit more red than you used for the orange mixture, and just a tiny bit of blue. If your mixture appears too green, increase the amount of red; if too orange, add a speck of blue.

For *Burnt Sienna,* start with red and add an equal amount of yellow and just a touch of blue.

For *Burnt Umber,* start with an equal amount of yellow and blue. Mix these together to produce a green, and then add a tiny bit of red at a time until the mixture appears right. The amount of red will be about half that used for the yellow or blue. A *black* can be produced from two parts blue and about one part red and one part yellow. (If the proportions are correct in this last mixture you will have a very neutral gray when you add white.)

Three primaries plus white

White is important to your palette. In working with oil paints, the artist uses a larger quantity of white than any other pigment, for with it he lightens the other colors. This is why it is sold in large (one-pound) tubes. To produce a light pink with Alizarin Crimson, for example, you have to add considerable white because of the strong coloring power of the red.

There are four kinds of white paint that you should know about. The first three are Titanium White, Flake White, and Zinc White.

Titanium White appears to be most popular for all-around painting because it is quite opaque, has a good buttery consistency, and does not turn excessively yellow.

Flake White is a very opaque white, and quite buttery in quality, but tends to yellow excessively in a short time.

Zinc White is a very slippery pigment and is somewhat translucent. It is excellent if you like these characteristics.

The fourth white falls into a different category. This is a "fast-drying" white. It is specially prepared for use where the artist wants to work with heavy applications of white and yet have the surface dry fairly rapidly. White pigments are normally very slow driers. You might wish to mix a little fast-drying white with your regular white when you want to hasten the drying of a painting.

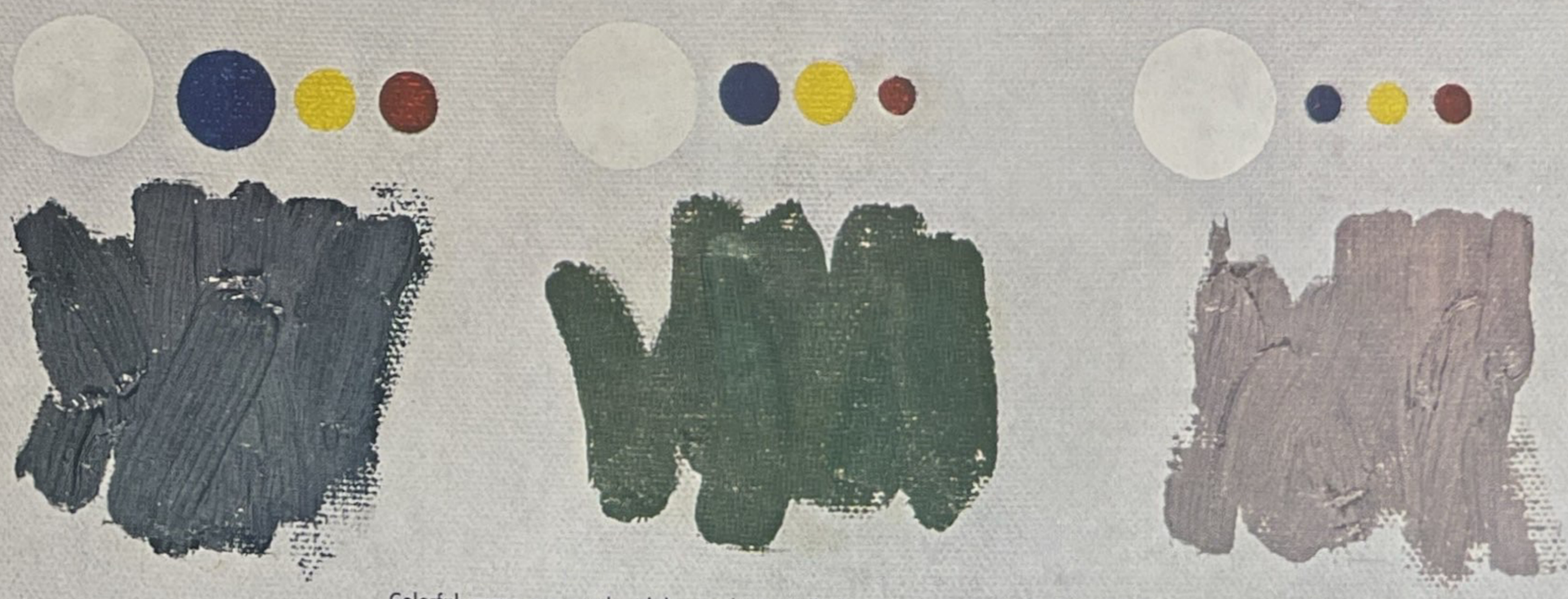
Grays

To the artist the word *gray* has a much broader meaning than a mixture of black and white. Here are two points to remember:

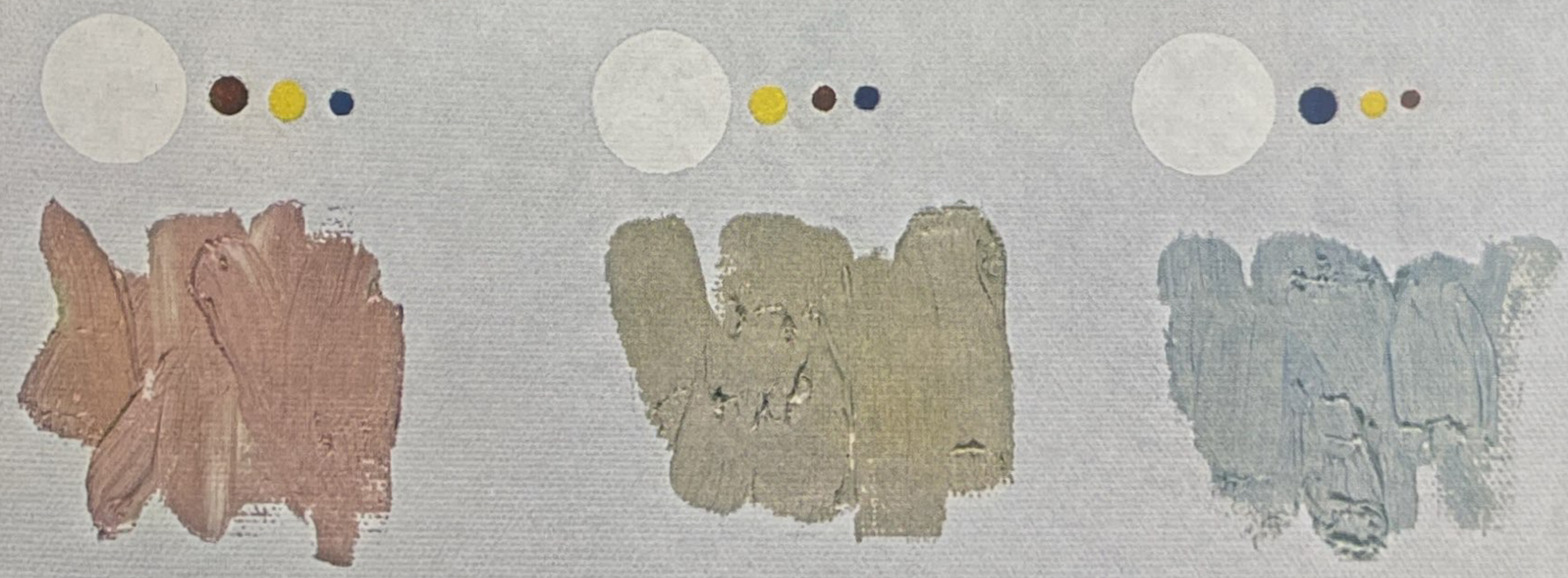
1. *Grayed color* — this is a color that has been reduced in intensity to a *slight degree* by adding a complementary color or black. This mixture may contain a small amount of white used to adjust the value.

2. *Grays* — these are mixtures containing all three primaries plus white; but the mixture of the three primaries is generally so neutral that it is not considered a specific color such as red, blue, or brown. It can lean toward one color or another, however, to produce colorful grays.

The number of beautiful grays you can produce depends simply on how you vary the proportions of the three primaries and the amount of white. Your principal concern is to decide whether you want a warm or cool gray, depending on its use in a picture. Then let your warm or cool colors dominate in the mixture. A pinkish *warm* gray, for instance, would demand more red — the least amount of blue. A pinkish *cool* gray would contain less red — the least amount of yellow. With practice, you will be able to produce blue-green grays, pearly silver grays, warm brown



Colorful grays are produced by combining all three primaries, plus white. We see here how slight variations in the proportions of the primaries produce entirely different color qualities.



Notice that you need to add only a very small amount of color to the white to make these light grays. As a general guide, the amount of white paint you put out for the mixture will determine the quantity of gray you end up with.

grays. Don't be in a hurry to arrive at a mixture. Adjust the amounts of color (a very tiny bit at a time) until you get the particular color you like. For your grays it is best to start with white and then add the small amounts of color.

Tube black

Black, as it comes from the tube, is a very desirable color for the painter — yet it must be used with caution. The beginning student should *avoid using black alone, or mixed just with white, to suggest nature's grays.* The total lack of "color" in such cases tends to isolate them from the rest of your color scheme. It's better to mix grays from color.

You can, however, introduce small quantities of black into any color mixtures to darken or gray them.

In paintings where color is employed in a purely decorative or abstract way, tube black can be very effective, used full strength or mixed with white.

Having completed this practice and study of mixing colors with the three primaries, you will have a better understanding of the simple relationship of all the various pigments available to you. Keep in mind the idea that any color that you purchase or mix on your palette is related to one of the three primaries, red, yellow, or blue, and that the principles of color mixing that you study here will apply to any problems you have in the future.

Here is a palette in use, showing an arrangement of colors and the double palette cup clipped to the edge. One cup contains painting medium, the other turpentine. The piles of paint have been placed close to the edge to give as much room as possible for the mixing area. The colors shown here are (counterclockwise) Alizarin Crimson, Cadmium Red Light, Yellow Ochre, Cadmium Yellow Pale, White, Viridian, Ultramarine Blue, and Burnt Umber.

Different palettes

On the previous pages we've discussed color mixing with a limited palette of three colors, plus white. With such a palette you can produce very satisfying results and, what is more important, you can learn a great deal about color mixing. However, once you have gained some experience, you will want to expand your palette either because ready-mixed colors are more convenient or because there are certain color qualities you can't achieve by mixing the three primaries.

Selecting colors

Choosing additional colors is largely a matter of personal taste, and you should experiment to determine which are most useful to you. The selection of colors shown on the palette above, although fairly limited, will prove quite satisfactory for general use. Adding four more colors — Cadmium Orange, Burnt Sienna, Cerulean Blue, and Ivory Black — will give you a very complete range.

From time to time you might experiment with other pigments that are similar in color to the ones we've suggested here, either to use in preference to or in addition to these pigments. For example, Prussian Blue and "Thalo" Blue are similar to Ultramarine, although the Ultramarine is slightly redder. Rose Madder and "Thalo" Red can be used in place of Alizarin Crimson. Venetian Red, Indian Red, and English Red are similar to Burnt Sienna. Each has its own characteristics, and it is up to you to determine the specific colors and range of colors that you will want to work with.

Most artists have a dozen or more colors available but don't always put them all out on the palette for every picture. They might select a group of colors that relate to the mood of the picture they intend to paint. The upper painting on the opposite page was done with a very limited group of colors.

Arranging the palette

It's advisable to keep your colors in the same order on your palette each time you work. Mixing will proceed much more easily if you know exactly where each color is. Even when you put out just a few colors, keep them in the same order you use for your fuller palette.

Most painters arrange their colors in the order of the spectrum — red, orange, yellow, green, blue, and violet. Colors such as Burnt Umber, Burnt Sienna, and Yellow Ochre can be placed within the spectrum arrangement or they can be grouped together.

As we've said, the piles of paint that make up your palette will usually remain soft and workable for a week or more. Some colors, such as Burnt Umber, will form a skin, but you can cut this away, exposing the wet paint.

Care of the palette

Your mixing area on the palette should be cleaned at the end of each painting session, for once you introduce any painting medium or turpentine into a mixture it may dry in a day or so. To clean the mixing area, first scrape it with your palette knife, then wipe it with a rag dampened with turpentine. Before cleaning the entire palette, some artists remove the piles of paint with a knife and set them on a sheet of wax paper or glass. After the palette is clean they put the unused colors back.

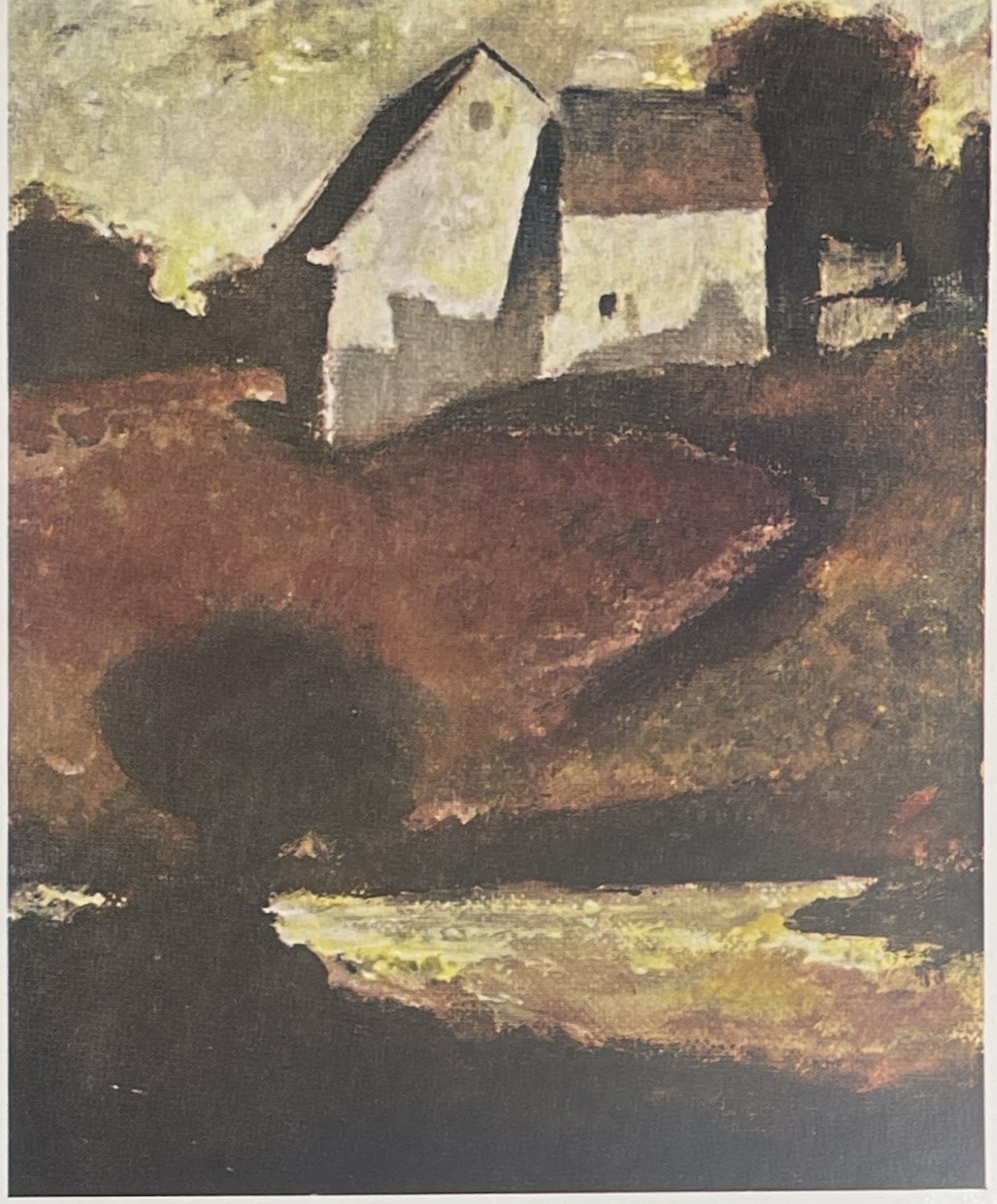
Choosing a palette

The choice of pigments to put out on your palette is a personal matter. Some artists prefer one selection of colors; others prefer a different selection. Also, the kind of picture you want to paint can determine the colors you choose.

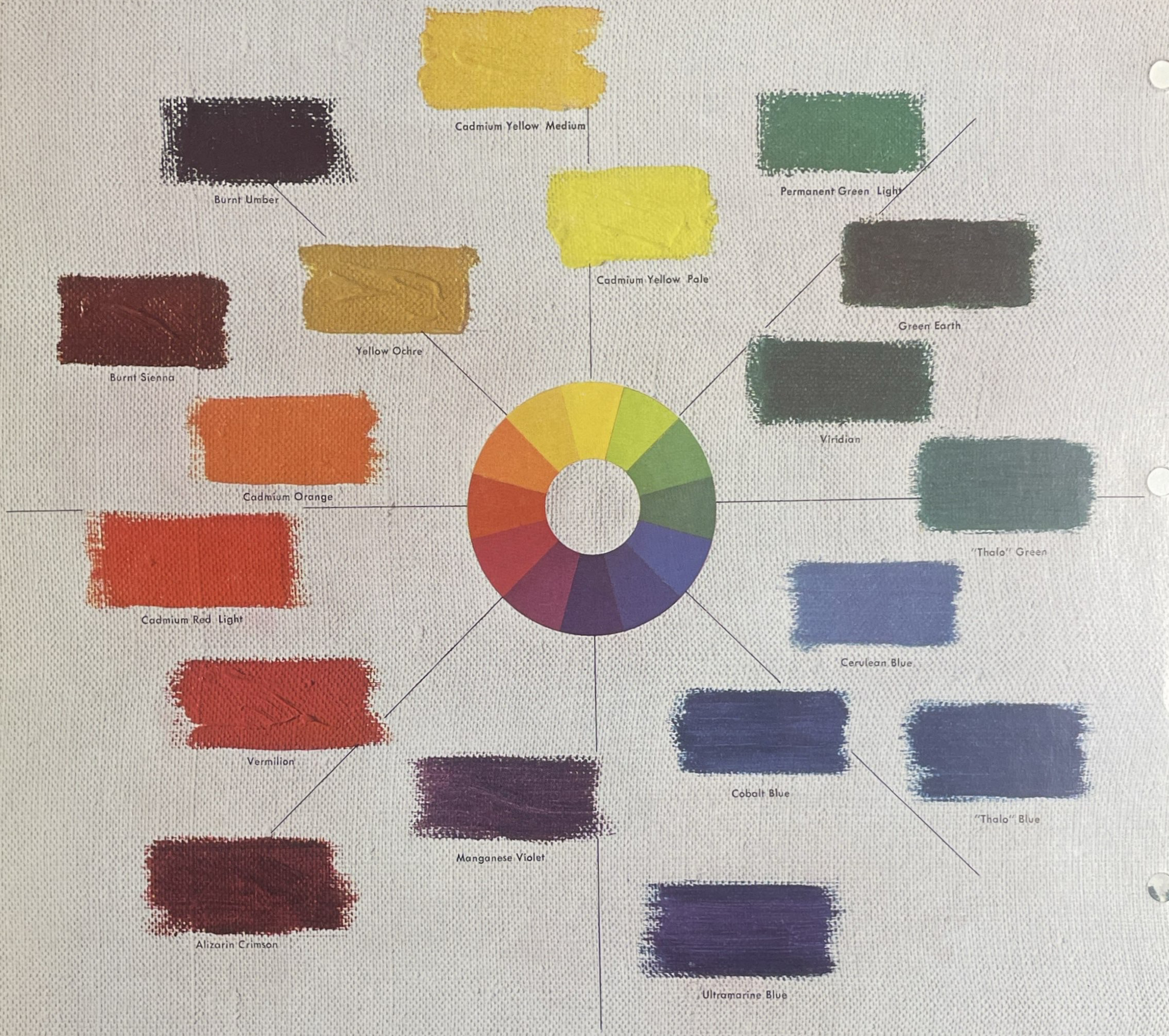
The painting at the right was done with a limited palette of Burnt Umber, Burnt Sienna, Cadmium Yellow Pale, Viridian, and white.

The painting below, by Vlaminck, has an entirely different mood. He used a fuller range of primary and secondary colors to create a feeling of gaiety and excitement.

Experiment to find which colors best express your feelings.



Collection of Mr. and Mrs. John Hay Whitney



The pigments you use

Above, in the small circle of colors we see the primary, secondary, and intermediate colors. Around this we have arranged some of the most common and useful oil pigments that can be purchased.

These tube colors, no matter how remote they may seem from the color wheel in the center, can be related back to it. They fall into one of the basic groups – red, orange, yellow, green, blue, or violet. Burnt Sienna, for example, although much darkened in value and less intense in color, is part of the orange family.

Knowing the family relationship of the less obvious colors will help you in color mixing. For instance, to reduce the intensity (brilliance) of Burnt Sienna, you can look across the color wheel from orange to determine its complementary color – which is blue. Any of the blue pigments on your palette might be used to gray (reduce the intensity of) Burnt Sienna.

Putting sunlight in color

The paintings on this page both depict a sunlit day. The one on the left achieves this by its definite pattern of light and shade and the distinct cast shadow on the building. The color, however, has been used in a personal way, without attempting to relate it to the light source or the surroundings.

In the painting below, we used the same distinct pattern of light and shade and cast shadow, but the color has been added in a more realistic way. It emphasizes the warm light of the sun and the cool influence of the sky.

How you use color will depend on the effect you want. If your intention is to relate it directly to nature, make use of the principle of warm and cool color shown below.

The light areas of the clouds have been warmed with a bit of Cadmium Orange, the shadows cooled with Ultramarine Blue and Alizarin Crimson.

The roof in sunlight has been warmed by adding Cadmium Red Light and a little Lemon Yellow to Alizarin Crimson.

Cerulean Blue has been brushed into the shadow side of the roof to indicate the cool reflected light of the sky.

Here, Cadmium Orange has been added to the light side of the building to give it a strong feeling of warm sunlight. (Sunlight appears warmest in the morning and late afternoon.)

For the cooler shadow areas, Cerulean Blue and white were reduced in intensity with Cadmium Orange. The orange comes through stronger in some areas to suggest reflected light from the sunlit surroundings.

Venetian Red and a little Yellow Ochre have been mixed with the Burnt Umber for a rich, warm color. (The choice of which warm and cool pigments to use depends on the effect you want.)

Variations of a color

There is little difficulty in determining the *basic* colors of a subject, such as blue sky, green foliage, yellow sand, gray rocks, or blue water.

What you must learn is that there are many different blues, greens, yellows, and grays. You must also learn to recognize these differences so you can produce them with your paints.

You should not simply mix up *any* green and put it in your painting to represent the foliage of a tree. Look at your subject. Try to determine just what particular green you see. Is it a pale color, or quite intense? Is it a warm green or a cold blue-green? How warm?

It isn't hard to determine the exact nature of a color if you begin to observe and compare it with others that are similar. Compare a color close by with a similar one at a distance. Study a color that is in shade with the same one in sunlight.

Look up into the blue sky and notice that the color overhead is slightly different from that down near the horizon. This difference is even more apparent if there are clouds separating an upper blue area from one further down.

As you study the sky, compare its color with other blue objects that might be visible at the moment — a blue automobile, a bit of blue cloth, or the blue paint on your palette. By making such comparisons, you can determine whether it is a bright blue, a dull gray-blue, or a light pale blue — whether it leans toward the warm colors of the spectrum or toward the cool green tones.

Such comparisons of nature's colors are a part of the artist's daily exercise. They become a habit. Even when not planning a painting, you will find yourself observing similarities and differences of color all about you. As these observations are stored in your mind, they become a background of reference to help you with color problems in the future.

Once you begin to recognize the difference in colors within the same family, you will find them easier to mix, for you will recognize what makes them different.

On the opposite page is a photograph composed almost entirely of greens, but they are *different* greens. By studying one in relation to another, we can quite easily determine how they differ and, therefore, how to mix a given color with our paints. The house, for example, if seen by itself, may appear quite green, but compared to its surroundings it is a very pale gray-green.

The foreground foliage, on the other hand, appears intense compared to the other greens. We can also see that both the house and foreground foliage are light in value compared to the distant trees.

To mix the pale, light green for the house, we started with Viridian and lightened it with considerable white. This made a pale, cool green. A tiny bit of red was added to gray the mixture (remember, we gray a color by adding its complement). A bit of yellow gave the mixture a feeling of sunlight.

The grape leaves in the foreground show a number of different greens. For our demonstration, we mixed a color to represent those leaves that appear as a warm yellow-green. By comparison with other greens in the photograph, it is quite evident that our mixture would contain a lot of yellow — almost orange — so we used a Cadmium Yellow Medium as a start. To this we added a little Cerulean Blue. This made a green that was a little less intense than if we had used Viridian. Since the mixture still appeared a little too intense, we added a bit of red. Finally, we added a bit of white to lighten our mixture. (Too much white tends to weaken the intensity of a color, so add it as sparingly as possible when you want a rich color.)

The blue spruce, to the left of the house, is much bluer than other greens in the photograph. We started our mixture with Cerulean Blue, for the spruce seemed closest to this color on our palette. However, the Cerulean was too intense, so we grayed it with some Burnt Umber. We chose the umber rather than the complement, orange, because the orange might have made our mixture too warm; the umber was more neutral. A touch of yellow was added to give it the greenish appearance, and we used white to lighten the mixture.

Each mixture in this demonstration represents the *general* color of the object. In a painting, you might use a number of color variations within a single object. The procedure of analyzing and comparing one area with another would be the same as we have discussed here.

For the large tree over the house, we started with Viridian, for it is a fairly dark value. However, comparing this tree with the dark one just to its right, it appears slightly orange in tone. We added a fair amount of orange, which gave us the warmth and also lightened the green; but when we were satisfied with the amount of orange, the mixture was still a little dark, so we added some Cadmium Yellow Pale.

These demonstrations are not intended to suggest that there is one particular formula for each of the colors we mixed. On the contrary, we could produce this dark green by using any of the following combinations: Viridian, Alizarin Crimson, and Cadmium Yellow Pale; Viridian, Burnt Umber, and Cadmium Yellow Light; Black, Cadmium Yellow Medium, and Cadmium Orange. The important thing is to discern color differences in nature and to learn what the colors on your palette can do.

Cerulean Blue
Cadmium Yellow Pale
Burnt Umber
White

Cadmium Orange
Cadmium Yellow Pale
Viridian

White
Cadmium Yellow Pale
Cadmium Red Light
Viridian

Cerulean Blue
Cadmium Orange
White
Cadmium Yellow Medium

Nature contains many variations of a single color, and you must learn to tell them apart. This photograph shows many greens. By comparing one with another you can determine how they differ.

We have mixed some of the greens to show that they can be produced from the pigments on your palette.

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Select a color theme

Always plan the color in your picture to create a definite effect that will strengthen the picture idea. The pictures on these two pages are fine examples of such planning. Next to each one is a strip of typical colors taken from the picture and isolated, to emphasize the color theme of the painting.

In Doris Lee's Snake Charmer, the limited colors consist chiefly of warm, dusty browns, appropriate for the heat of the North African locale.

Ben Shahn's The Staircase is a perfect demonstration of how to center attention through the use of color. The single discordant red note stands out dramatically against the cold grey-blues that dominate the rest of the picture.

Ernest Fiene's New Snow is an excellent example of how effective a limited number of grey, muted colors, can be when used in a sound design with strong value contrast.

Doris Lee's other picture Summer Idyll, contains dominant blues and greens which make this mid-summer scene a pleasantly cool one. Had she used *warm* greens, greys, yellow, etc., the effect might have been disagreeably hot.

Doris Lee — Snake Charmer

Courtesy City Art Museum of St. Louis

Ben Shahn — The Staircase

Ernest Fiene — New Snow

Courtesy The Metropolitan Museum of Art

Doris Lee — Summer Idyll

Courtesy Abbott Laboratories

Seurat — An Afternoon at La Grande Jatte

Courtesy Metropolitan Museum of Art

The eye mixes color

On the preceding pages, the different colors were made by actually mixing or stirring one pigment into the other, with a brush or painting knife. For example, red mixed with yellow makes an orange paint, or red mixed with blue makes a violet paint. This, of course, is the usual way of mixing colors. However, you can also create the effect of an orange area in your painting, by placing small strokes, or dots, of pure red and yellow alongside of each other. Viewed from a slight distance, these red and yellow dots merge and appear orange. Red and blue dots appear violet. Dots of complementary colors, such as red and green, yellow and violet, create a richer, or more vibrant gray than we get by mixing these colors on the palette. This type of painting, letting the eye mix colors, formed the basis for a whole school of painting, called "Pointillism," which developed in France during the 19th century. The detail above is from "An Afternoon at La Grande Jatte" by Georges Seurat, the best known member of this group. The pairs of swatches around the detail show in one square how the pure colors would be placed side by side. The other square shows the general effect of these colors when seen from a distance.

Let's start painting

The demonstrations on the following pages are designed to show you: (1) how to recognize colors in nature; (2) how to mix up these colors on your palette; (3) how to apply them to your canvas.

To demonstrate these points, we have used color photographs to represent a real still life. When you study these photos, look at them as if they were *the actual objects*. Even before you pick up a brush, sit down and study the colors in the subject you are going to paint. Look at them through squinted, or half-closed eyes, and see them as *shapes of color*. We have already pointed out that there is no such thing as a single color for grass, another for sky, etc. The color in all materials will vary with each change in the light that strikes it. As you study the subject you are about to paint, ask yourself questions like these: First, what is the color of the light? Is it warm, or cool? Where is the darkest dark in the entire picture; the most intense color; the grayest color? If there are several red colors in this subject, which ones are cool, which warm? Each of these questions can be answered, by comparing *one color with the other*. In fact, you should be able to make a sort of mental color sketch, in which you accurately paint the relationship of all the colors in your subject. Unless you can create such a picture in your mind's eye, there is no use in mixing up pigments on your palette, since you won't know what color you are trying to create. Therefore, spend plenty of time simply looking at the colors in your subject.

Once you do begin to paint, relax and have fun. Put your colors down confidently, but not carelessly. Make it a special point to look for, and recognize, the wide variety of colors in the light, half-tone, and shadow areas of your subject. As you make these observations, follow through in your painting by mixing up small amounts of color, and making color changes with every few brush strokes. Do not mix up a large puddle of color. This encourages you to ignore interesting color changes, and to substitute large, monotonous areas of a single color.

Compare colors on the canvas

Make it a habit to compare your colors *on the painting*, not on the palette, because one color is strongly affected by the other. Mix the color you want, and put a few strokes of it on your canvas. Then, stop and look at it Compare it with the color next to it; decide whether it is too light too dark, too red, etc., or just right. Don't waste a lot of time trying to mix the exact color on the palette. Remember, your color will look different against the palette than it will on the painting.

Another thing to keep in mind is the *manner* in which you apply this color to your painting. Avoid mixing one color into the color alongside it, or beneath it. For example, suppose you decide on a certain color for a sky area, and a certain color for a foliage area: when you have mixed up the sky color, put it down and leave it alone. Do the same for the foliage. If you start brushing the color of the foliage into the sky, you will end up with paint which is neither the color of the sky nor the foliage.

Painting from nature

If you study nature carefully, you will soon realize that you rarely see colors that are as strong, or as bright, as those you squeeze onto your palette. Colors like pure Cadmium red, or Cadmium yellow, should be used sparingly. Equally rare are cases in which you will find it necessary to use values as dark as pure black, or as light as pure white. Some painters find it helpful to tack two small squares of paper — one white, the other black — in the corner of their canvas. Then, they check the value of dark and light tones against these extremes. Whenever you are painting out-of-doors, there will be much more light on your painting than there will be when you look at it back in the studio. This stronger, out-of-door light makes the colors in your painting lighter, and more intense than they would be on your studio wall. Subtle color differences that seem just right while painting outdoors disappear in the weaker interior light. With experience, you will soon know how to compensate for this difference between indoor and out-of-door light.

You will also find it helpful, occasionally, to look away from your subject for a few minutes, in order to gain a "fresh eye." If you stare at the subject for long periods, you will lose sight of the proper color relationships.

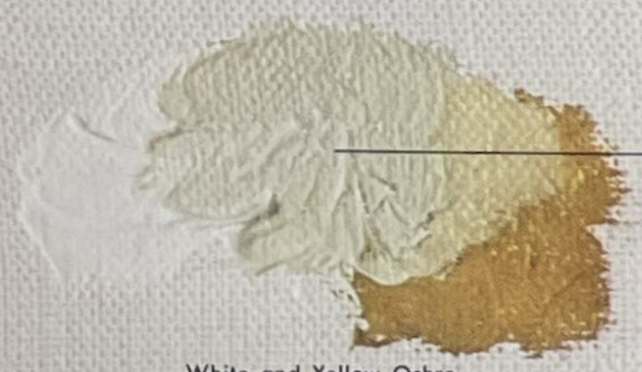
Always be aware of the great variety of color that exists in everything you see. A group of rocks, or a pile of logs nearby, may seem to be the same in color as the sand on which they rest. The color variations may be very subtle, but they are there. In such a case, imagine how these materials would look if we actually sprayed all three of them with a single color

Color in a still life

Let us assume that we have set up this still life and are about to make a painting of it. Before we even pick up a brush, we study it carefully, comparing one color with another, deciding what colors are darkest, lightest, grayest, or strongest. At the same time we also try to decide what combination of pigments we need to create these colors.

Although we look for a variety of colors within each object, we must not lose sight of the *basic local color* of each one. The bottle is green, the drape pink, the tablecloth white, and the background a warm gray. We decide to darken the background to bring out the tablecloth and drape.

Burnt Sienna, Viridian and White



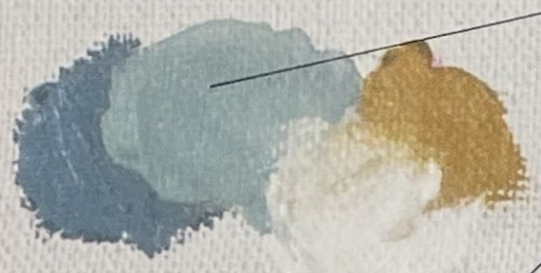
White and Yellow Ochre

Alizarin Crimson and White

Viridian and Yellow Ochre

Stage 1. First we *tone* the canvas with a thin, light wash of Burnt Umber and turpentine. This tone covers the pure white canvas and makes it easier to compare all values, *lights* as well as darks. When this tone dries we sketch in the still life, cropping the photo slightly at the left and bottom to improve the design. We relate main areas of color as quickly as possible. The lights are warm, the shadows cool. Note that these first few colors suggest *form* of objects in light and shadow, in contrast to the flat diagram of local color above. Comparison is easiest if we put colors of background, bottle, drapes, etc., *next* to each other. Note different yellows in apple, lemon and banana.

Stage 2. With the whole canvas laid in, we can compare colors accurately. See the definite differences in color between the light and shadow areas in the fruit, drape, and tablecloth. Note that all parts of the picture are equally unfinished. Don't waste time finishing up one section until you have compared it with all the other colors in the picture. If any colors need correcting, change them *now*.



Cerulean Blue, Yellow Ochre and White

Alizarin Crimson and Cadmium Yellow

Alizarin Crimson, Cadmium Red and White

Cadmium Yellow and Viridian

Stage 3. The finished picture is simply a refinement of the second stage. The forms are painted more carefully, and necessary details, such as highlights, reflected lights and shadow accents, are added. The wall seems too warm, so we make it cooler and grayer to keep it in the background.

Ultramarine Blue and Viridian

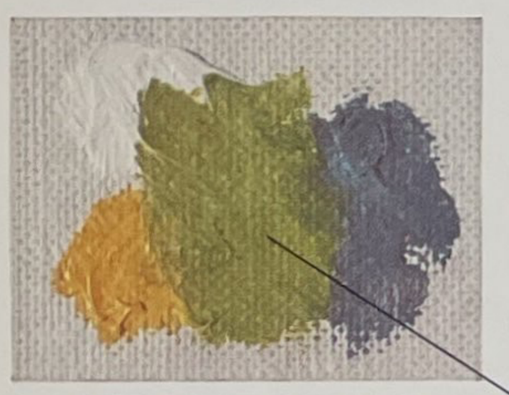
Alizarin Crimson, Cerulean Blue and White

Cadmium Yellow and Cadmium Red

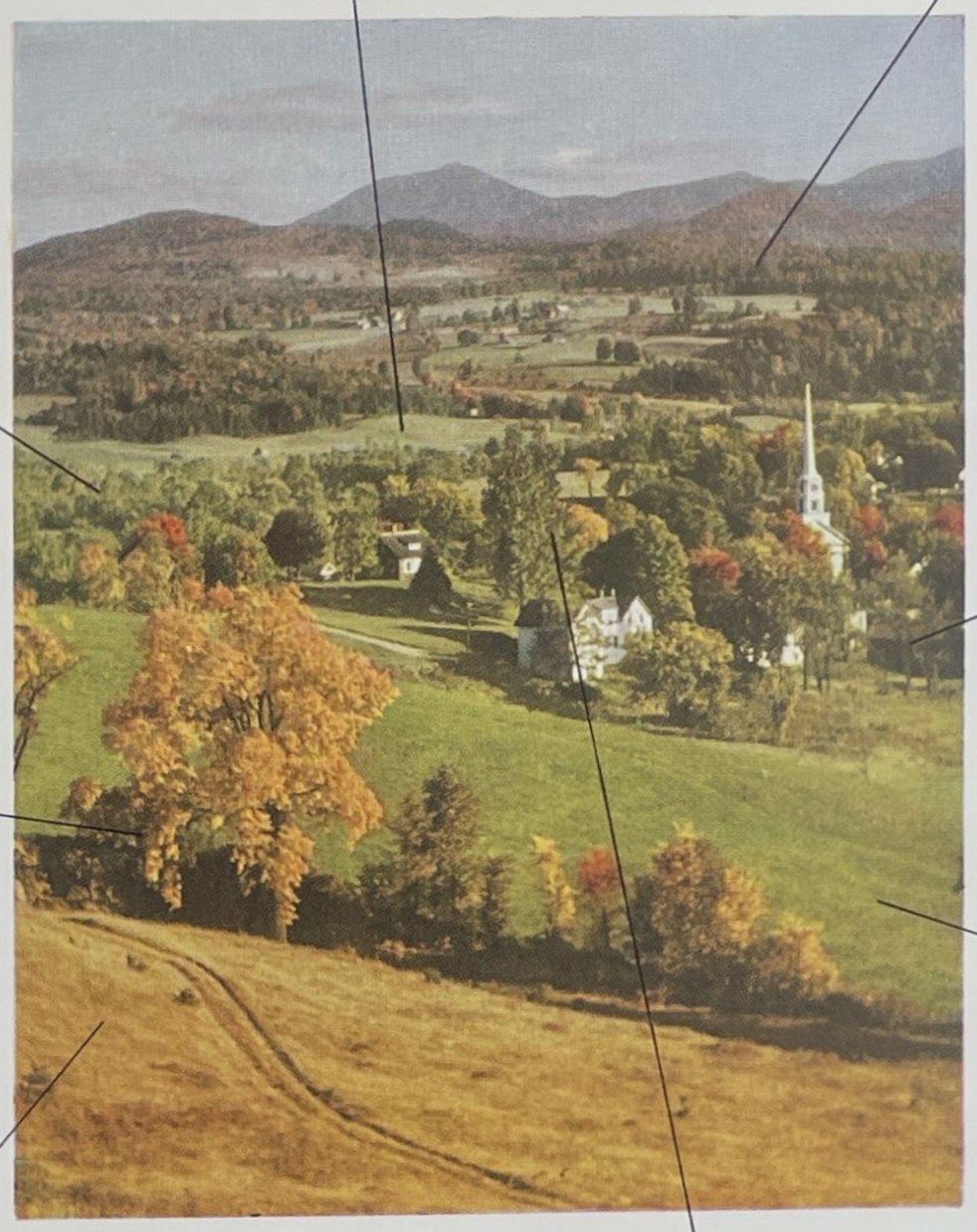
Yellow Ochre and Cerulean Blue

Cadmium Yellow (Light), White and Cerulean Blue

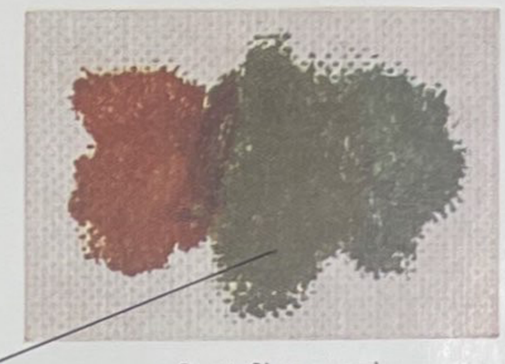
Yellow Ochre, White and Viridian Green



Cadmium Yellow (Deep), White and Cerulean Blue

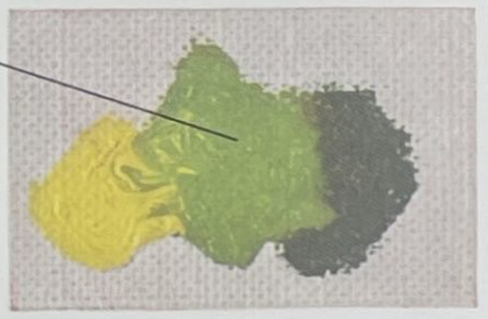


Courtesy Vermont Development Commission



Burnt Sienna and Viridian Green

Viridian Green and Cadmium Orange



Cadmium Yellow (Light) and Viridian Green

Cadmium Orange and Cadmium Yellow (Pale)

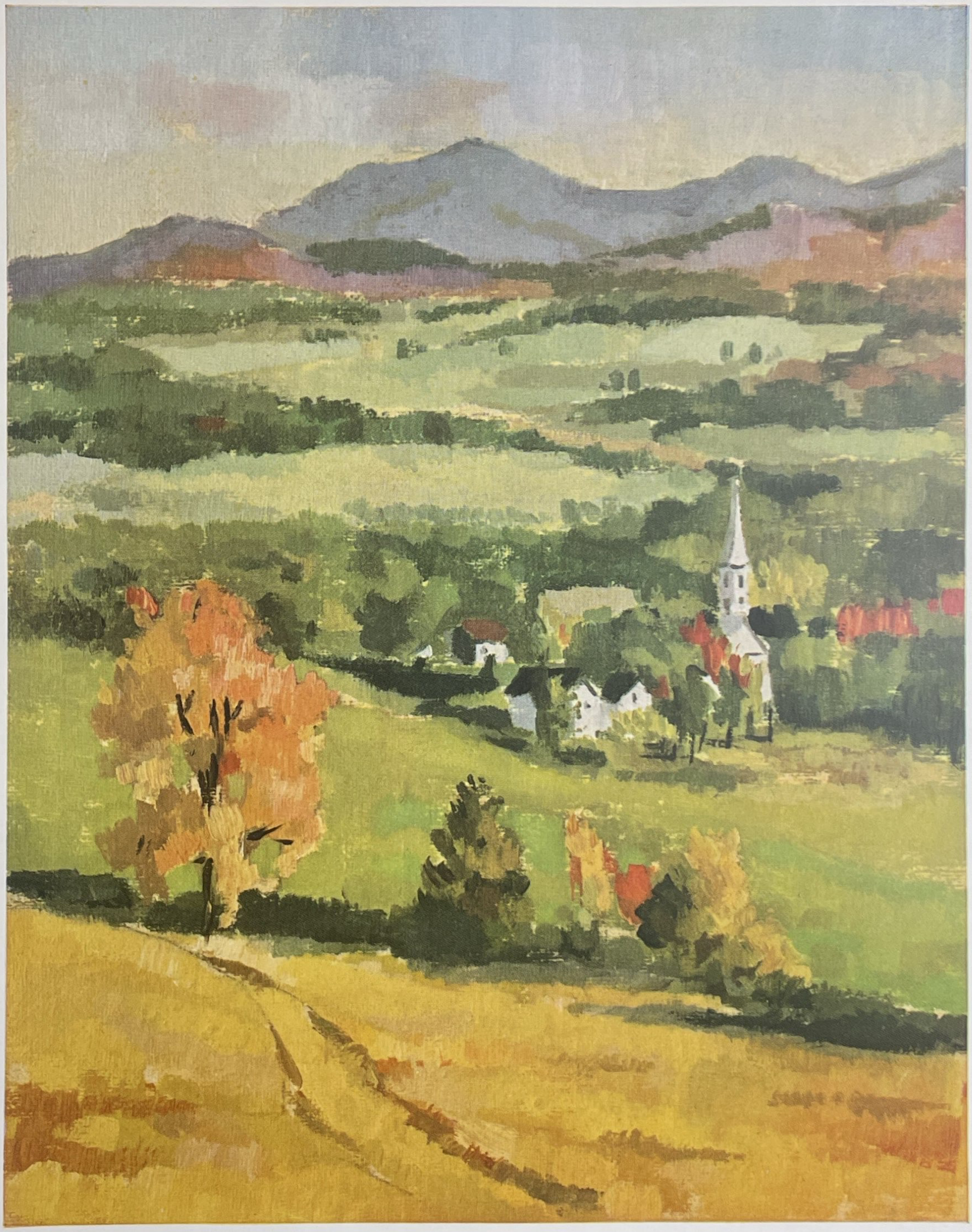
Black and Cadmium Yellow (Deep)

Color in a landscape

The photo above provides an excellent opportunity for comparison of colors in a landscape. The key to making a successful painting of this scene is *careful comparison of color*. Note the variety of warm oranges and yellows in the foreground, the greens in the middleground, and the various gray-blues and violets in the distance.

Before painting, study the scene carefully. Know where the strongest yellows and oranges are. Be aware of the variations of green, and know how these colors relate to those in the distant hills and mountains.

Paint the scene in your mind's eye before you pick up your brush. With experience you will learn and remember what combinations of pigments to use in creating the colors you see before you. Then you will be able to look at a scene like this, mix up colors similar to those in the swatches, and use them to paint a picture like the one on the facing page.



This painting of the scene on the opposite page is the result of: (1) careful comparison of the colors in the landscape; (2) knowledge (gained largely through practice) of what pigments to mix for each color; and, (3) constant comparison and adjustment of the colors while painting. Like any good painting, this picture is not an *exact copy* of the photo. The artist has simplified and adjusted wherever he felt such changes would improve his picture.

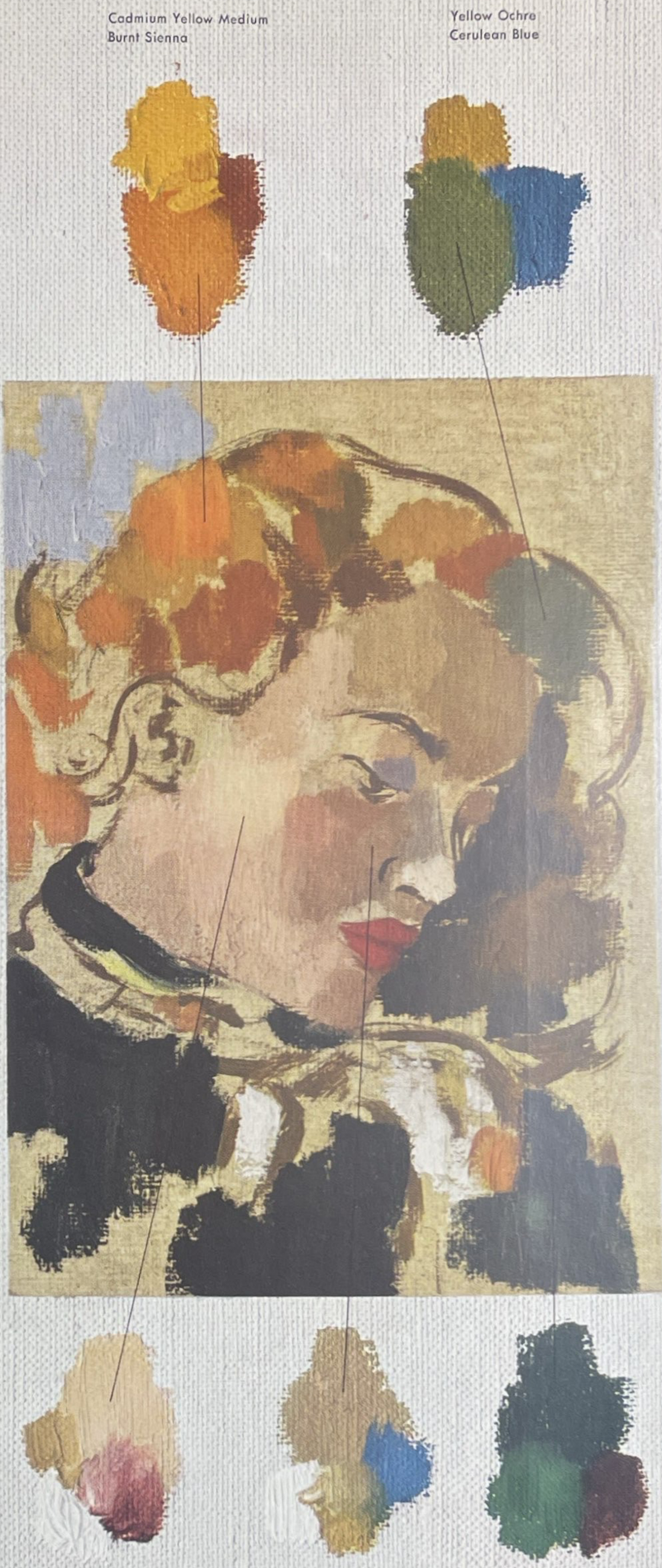
Photograph by Andre de Dienes

Color in a portrait

The use of color in a portrait should be approached in the same way as color in a still life or landscape. Look at your subject in terms of areas of color that vary with the light, halftone, and shadow planes. Remember that a head is just as *solid* a form as the apple in the still life, or the church in the landscape. *Always paint it as a form.*

Beginning painters often have difficulty because they paint as if they do not believe what they see. Instead of looking for, and comparing, the different colors in areas of light and shadow they try to mix up a "skin color," and apply it like make-up to the entire face. Naturally, this flattens out the head and destroys any illusion of form. They may add black to the shadows and white to the lights to create form, but the lights are chalky and the shadows muddy.

This demonstration is designed to show you how important it is to: (1) think of the head as a solid form, with planes of light, halftone and shadow; (2) see these planes as areas of warm and cool color; (3) recognize *subtle variations* of color within these areas.



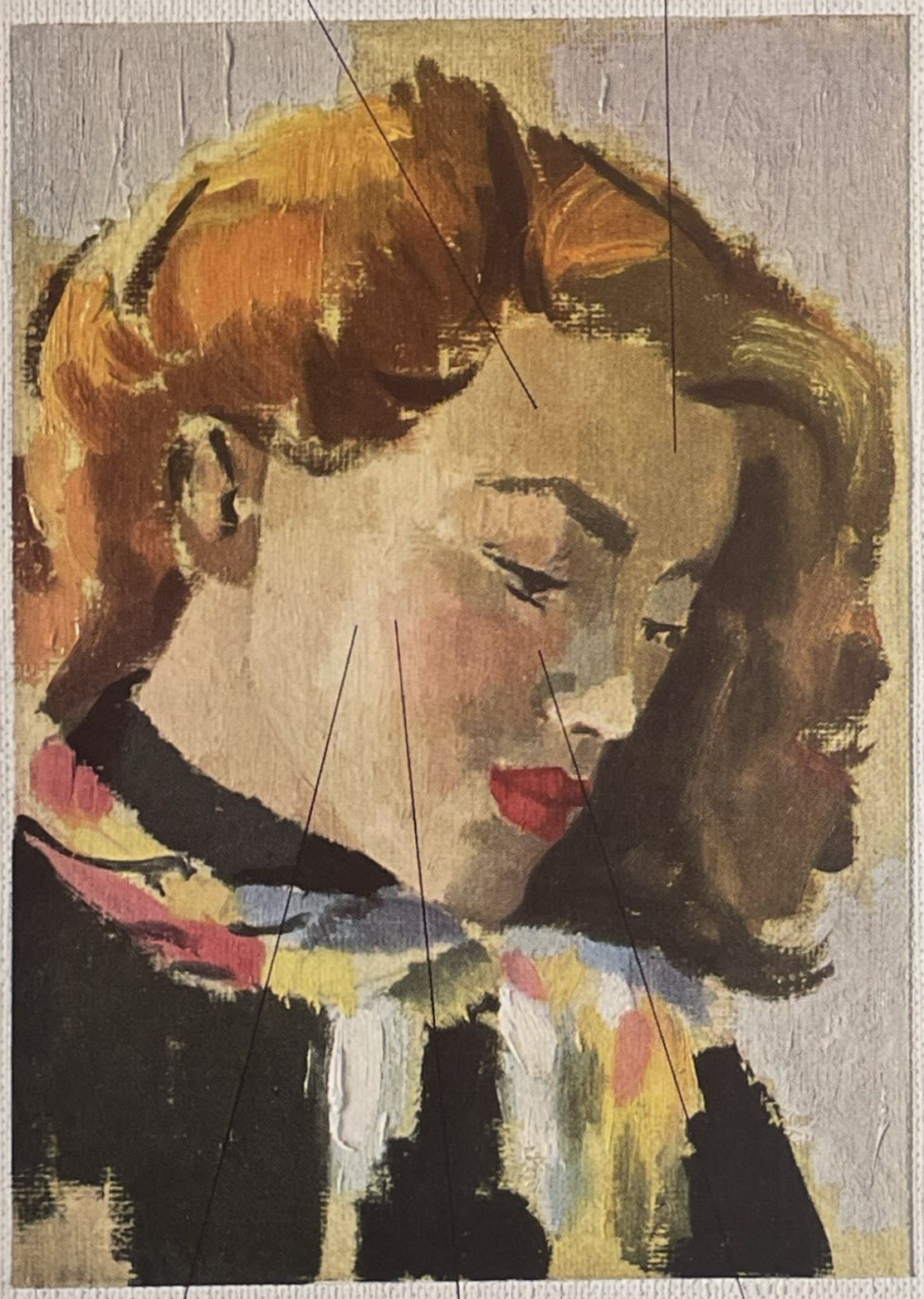
Stage 1. First, we tone the canvas and establish our basic drawing. The light planes are warm, and the shadows cool. With a few brush strokes we paint in the dark areas of the hair, flesh and sweater. Next, the light areas. Note that colors are put down as areas of light and shadow, not just single colors for the flesh, hair, and sweater. See how this difference of light and dark begins immediately to create the illusion of a solid head.

White
Cadmium Orange
Cerulean Blue

Burnt Umber
White
Viridian Green

Cerulean Blue
White
Alizarin Crimson

Cadmium Orange
Viridian Green
Cerulean Blue



Yellow Ochre
White
Cadmium Red

White
Yellow Ochre
Alizarin Crimson

Burnt Sienna
White
Cerulean Blue

Yellow Ochre
Alizarin Crimson
White
Cerulean Blue

Cadmium Red
White
Cerulean Blue

Alizarin Crimson
White
Cadmium Red

Stage 2. Next we turn our attention to the color in the *halftones*. These halftone areas must be studied very carefully. Their subtle color is not obviously warm or cool, but rather neutral, since the tones form the transition between the warm lights and cool shadows. However, you cannot create halftones by simply brushing lights into darks. They are colored grays that call for close observation. Note how neutral even the strongest flesh colors are compared to the scarf.

With the lay-in completed you can compare and adjust any colors that do not relate properly.

Stage 3. To complete the portrait there are no radical changes in the final stage, just refinements. For example, the background is made cooler, and cool reflected lights are added around the eyes and nose. We add highlights along the top of the hair, on the lower lip, and scarf. Notice that the lightest part of the face is much darker than pure white paint. It seems light only because of the dark tones around it.

Limited palette

One of the easiest ways to learn how to control color is through the use of a *limited palette*. This palette usually consists of two or three colors, plus black and white, as opposed to a fuller palette. In addition to black and white, a limited palette might contain just Cerulean Blue and Yellow Ochre, which would give you a warm and a cool color. Or you might use yellow and green, or green and violet, or any other combination you wish.

Because it requires considerable experience and practice to use a full palette of colors with the proper restraint, many students will find it helpful to see first what can be done with just two or three colors. If you restrict yourself to these few colors you will quickly learn how to achieve interest by simply using a variety of *values* and *intensities*. You will be surprised at the large range of color effects you can create by fully exploiting these two color dimensions.

The pictures at the right demonstrate this point. They also show us that color contributes far less to the success of a picture than drawing, design and value pattern. The first picture in black and white compares favorably with the colored ones below it.

For many beginners such restraint as we show here is difficult. They want to use their reds, yellows and blues throughout the picture, and often at full strength. If you encounter this same problem, try a limited palette to improve your control of color

This entire picture was painted in black and white tones.

In this one only two colors were used. They are brown and blue, plus white.

In this painting there are three colors, brown, blue, and *yellow*, plus white.

This is a full color painting which contains blue, yellow, brown, red, and white.